THE OLD TIMER'S BULLETIN

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Published for the Old Time Wireless Operator, Historian and Collector

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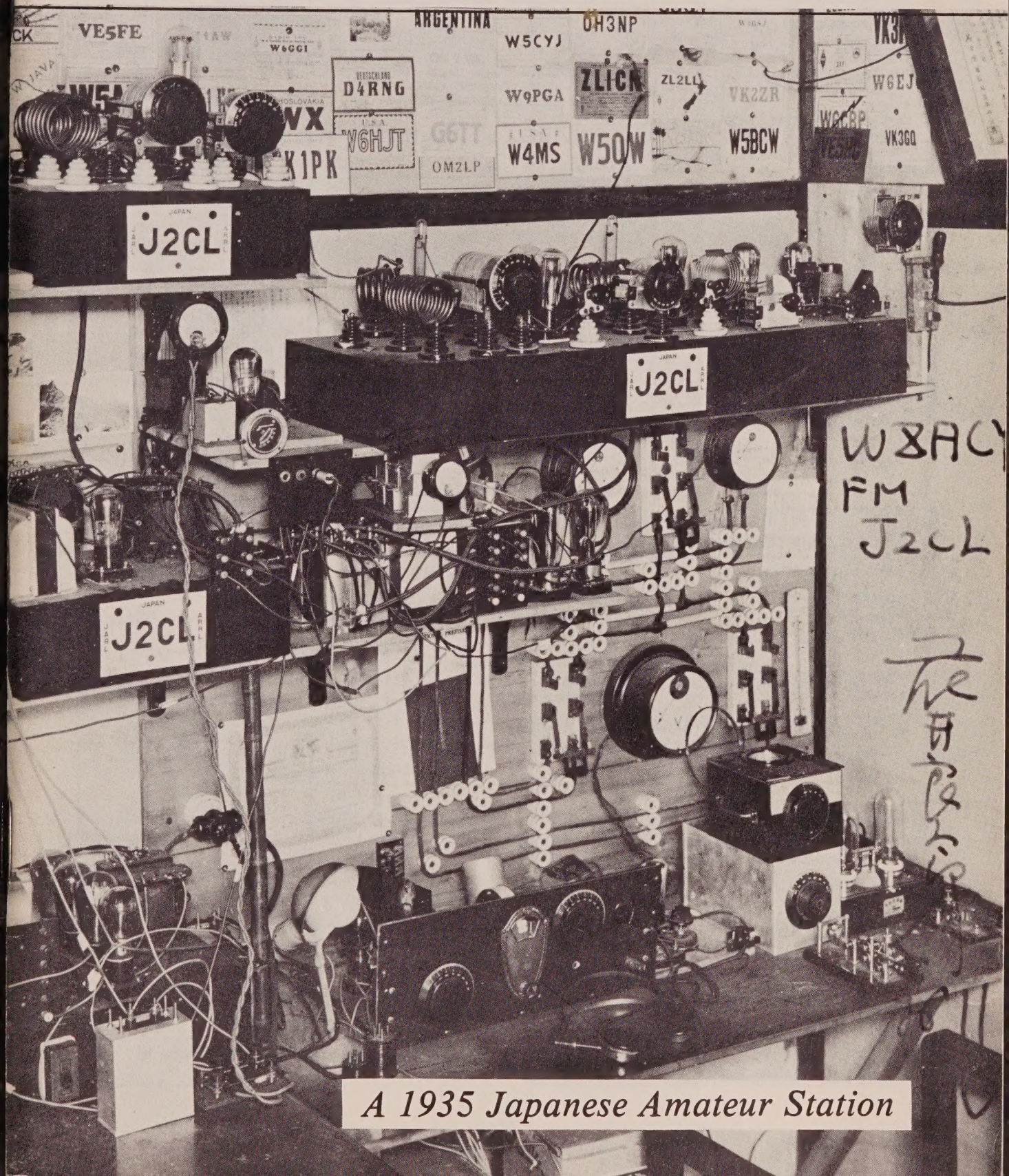

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Devoted to research and documentation of the history of wireless communications.

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All official business, Conference and meeting activities.

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All dues, address changes and new member applications.

Richard Ransley (Secretary) 17 Sheridan Street, Auburn, NY 13021
Want Ads, lengthy OTB articles.

Bruce Kelley, Main Street, Holcomb, NY 14469 (Tel. 716-657-7489)
General OTB material, Museum artifacts.

Dexter Deeley (Treasurer) 8 Briar Circle, Rochester, NY 14618
Financial reports, back issues of Bulletin.

Charles Brelsford, 255 Danbury Circle S., Rochester, NY 14618
Museum business and publicity.

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Change In Address?

All address changes and dues MUST be sent to: Bruce Roloson, Box 212, Penn Yan , New York 14527

Writing AWA Headquarters? Please enclose SASE for prompt reply....

COMING EVENTS

ANTIQUE WIRELESS ASSOCIATION

MAR. 17 P.S.A.R.A. - AWA Meet Seattle, Washington

MAR. 22-23 AWA South-East Conference, Atlanta, Georgia

MAR. 23 Museum Committee meeting and luncheon

MAR. 27 G.C.A.R.A. Meeting-AWA Cincinnati, Ohio

APR. 20 Museum Committee meeting and luncheon

APR. 29 Dayton (Ohio) Hamvention John Nagle- OT program

MAY 3-4 AWA Spring Meet & dedication, Orient, N. Y.

MAY 5 AWA Museum opens

MAY 10-11 I.H.R.S. - AWA Meet Aurburn, Ind.

MAY 18 S.C.A.R.S. - AWA Meet Burbank, California

MAY 18 AWA Upper Mid-west Conference, Minneapolis, Minn.

MAY 17-18-19 ARRL State Convent. AWA exhibits, Rochester, N. Y.

JUNE 16 AWA "Open house" and flea market, East Bloomfield, NY

JULY 20 AWA Summer Meet Breesport, N. Y.

AUG. 17 Museum Committee Meeting and luncheon

SEPT. 7-8 Annual 1929 QRP Contest

SEPT. AWA Exhibit at Hamfest Gaithersburg, Maryland

SEPT. 25-29 AWA CONFERENCE Canandaigua, N. Y.

OCT. V.R.P.S. - AWA Meet Dallas, Texas

OCT. 27 Museum closes for season

NOV. AWA Convention exhibit Clearwater, Florida

NOV. 3 Annual AWA Business Meeting. 2 PM, Sheraton Motel, Canandaigua, N. Y.

DEC. 1 Annual Christmas Party Locust Lodge, Ionia, N. Y.

---NOTICE---

Net Changes Starting Time

Due to deteriorating band conditions (11 year cycle) the 20 meter Net has been changed to 2:30 PM EST/ESDT and a new 75 meter net (3868 kc.) has been established on SUNDAY at 5 PM (EST/ESDT). These new times and frequencies will allow maximum opportunity to work fellow members.

--Ken Gardner, W2BGN

COPY FROM ROCHESTER CLUB PAPER

AWA HOSTS NATIONAL HISTORICAL CONFERENCE

Nearly 800 amateur radio historians and collectors met recently at Canandaigua for a 4-day conference consisting of talks, demonstrations, contests and an auction of vintage equipment as well as a huge flea market. The conference was truly international with members registering from far-away Japan and South Africa. AWA has a 3000 membership, making it the largest club of its kind.

Historical papers covered a wide range of subjects: National receivers, the manufacture of RCA tubes, collecting telegraph keys, early receiver and transmitter design and the history of the National Bureau of Standards (WWV). A highlight was a spirited talk by Marconi's daughter, Gioia Marconi Braga.

NEW DIRECTORS

The following members were elected to the AWA Board at the Annual Meeting:

CHRIS FANDT, WB2WAO (Jamestown, NY) is a broadcast set collector and has worked with the Conference Committee.

GLEN FULLER, N2EXL (Kenmore, NY) is responsible for the new tube exhibit. Both he and his wife are on the Museum Staff. His interest is divided between early telegraph equipment and vacuum tube history.

ED GABLE, K2MP (Rochester, NY) is the top communication (amateur) collector in the area. Ed is with Harris RF Communication Corporation. He will help handle the Museum's amateur equipment.

SOUTH-EAST REGIONAL CONFERENCE

Stone Mountain Park, Georgia (near Atlanta)

March 22 & 23, 1985

A committee consisting of Larry Flegle, Ron Lawrence and Don Patterson are busily engaged in setting up a great "meet" for members in the south-east. All kinds of interesting activities are planned for radio historians and collectors. Members in the area and nearby states are urged to attend. More information in the March *OTB*. Advance info on motels, etc. may be obtained by writing Larry Flegle after February 1. Address: 8825 Roswell Road, Suite 475, Dunwoody, Georgia 30338. All AWA members in the SE will receive flyers in the mail sometime in February. Start planning now!

Meet Horace Witherspoon, a new member of our Editorial Staff. A veteran of many years experience, his expertise will add much to our publication.

AWA NETS (EST/ESDT)

PHONE (SSB) -- 3866 kc. Tuesday 8 p.m.
Mon. - Wed. - Fri. at 9:30 a.m.
Sunday -- 7247 kc. at 12 noon
Tuesday -- 14274 kc. at 2:30 p.m.

CW -- 3584 kc. daily at 4 p.m.
First Wed. each month at 8 p.m.

COMMENTARY

LINCOLN CUNDALL, W2LC

Just as we were about to print this issue, word was received that our Comptroller and Co-founder of AWA was stricken with a fatal heart attack. (Feb. 23, 1985) Details in the June OTB.

Nederlandse Vereniging voor de Historie van de Radio

Members may wish to join the Netherland's vintage radio society (N. V. H. R.) which publishes an excellent journal. The paper is printed quarterly in their native language, large format with pictures and free "want ads" to members.

Each issue includes an insert printed in English summarizing table of contents. N. V. H. R. is an active society with over 500 members. AWA members had an opportunity to meet the president, Rien van Donselaar, at the BVWS-AWA Meet in London. Interested in joining ? Entrance fee is Hfl 10. - plus Hfl 35. - annual dues (airmail).

Make International M. O. out to:

Ledenadministratie N. V. H. R.
RHENEN, The Netherlands

and mail to secretary:

H. C. Nater, Grebbeweg 53,
3911 AT RHENEN, The Netherlands

A museum to visit:

Swiss Museum of Audio Visual Studio of Radio Lausanne
La Salla, Lausanne, Switzerland

The Lausanne Radio Studio could well be Switzerland's outstanding radio museum. A brochure describes a large collection of unique broadcast receivers, speakers and phonographs. Visitors should contact AWA member:

Gilbert de Montmollin (HB9EQ)
6 Avenue de la Gare
1001 Lausanne (Switzerland)
Telephone (021) 23 8611

From the President

The AWA Museum is greatly benefited by donations of equipment. In addition, monentary donations to the Museum Maintenance Fund are of significant help in meeting costs for general upkeep, materials, utilities and insurance. Monetary contributors during 1984 were:

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ASSOCIATION NEWS

SPRING MEET AT ATWATER-KENT MUSEUM

The big event in the Northeast this spring will be the dedication and AWA Meet at the Atwater-Kent Museum, May 3 and 4. The site is the home and museum of Ralph Williams, N3VT, on Main Street (Rte. 25), Orient, New York (about 7 miles east of Greenport). Located on the north shore near the end of Long Island, it is easily reached by car, train, and the New London - Orient ferry.

The event starts Friday with a flea market and tours of the Museum. In the evening, Ralph will present a slide show covering the restoration of the historic building.

A contest of early equipment made on Long Island is scheduled for Saturday with additional tours of the building. There will be a formal dedication of the Museum at mid-day. Activities will cease around 4:30 PM.

Members in New England will find it convenient to take the ferry from New London, Conn., which schedules 6 or 7 trips each way. Two nearby motels offer accommodations.

Flyers with additional information will be mailed in April to members in New England, eastern New York, Pennsylvania and New Jersey. Preregistration is only $3. per person. Capacity is limited, so advance registration is advisable.

Ralph Williams, N3VT
RFD# 1, Box 44, Main St.
Orient, New York 11957

AUSTRALIAN CONFERENCE

The proposed meeting of the Historical Society of Australia (H. R. S. A.) at Alice Springs has been cancelled due to poor response from members.

SUMMER MEET

The local summer meeting of AWA will be at Breesport, N. Y., July 20. Joyce and Lauren will again be hosts at their Museum. Noonday luncheon to be served at the nearby Methodist church. This will be a restricted affair with advance registration advisable. Further details in the June OTB.

WASHINGTON

AWA joins the Puget Sound Club for the first time. Let's have a good turnout from members in Washington, Oregon and British Columbia. See information elsewhere in Bulletin.

B.V.W.S. MEET

The British club has several events planned this year including the large flea market at Herpenden. Visiting England this June ? Write AWA for information.

There will be an AWA program at the Crosley Center (Cincinnati) in March and John Nagle will present a program at the big Dayton Hamvention in April.

VRPS-AWA TEXAS Meet

Another successful meet took place this past fall. AWA can thank C. F. Crandell for handling the AWA program. Another "meet" is planned in Oct. or Nov.

FLORIDA AWA Meet

Rex Matlack substituted for John Smith (who was ill) at the Sun Coast ARRL Convention, Clearwater, Fla. Working with other AWA members, he set up an impressive display of early equipment.

This annual event is popular with the many OTs in the area. We understand W4ACG is now back in business. Tks Rex.....

COMING EVENTS
ANTIQUE WIRELESS ASSOCIATION

WASHINGTON

Puget Sound Antique Radio Association and AWA

The P.S.A.R.A. and AWA will have a joint meet on Sunday, Mar. 17 at the club's museum, Ronald School, 175th & Aurora, Seattle, Washington. The "Swap meet" starts at 1 PM and program at 2 PM. For more information, contact: Stephen Carter, 5154 S. 329P1, Auburn, Wash. or telephone 206-833-3720.

GEORGIA

AWA SOUTH-EAST REGIONAL CONFERENCE
Atlanta, Georgia, March 22 & 23

See writeup under Association News. Everyone Welcomed ! 2 days of activities!

OHIO

An evening sponsored by the Gray Wireless Museum and G. C. A. R. A. with program by AWA.

Location: Crosley Telecommunication Center, 1223 Central Parkway, Studio B, Cincinnati, Ohio. Check with John Bruning, W8DSR for information.
Time: Wednesday 7:30 PM, March 27. Everyone welcomed !

INDIANA IHRS

INDIANA HISTORICAL RADIO SOCIETY and ANTIQUE WIRELESS ASSOCIATION

Auburn-Cord-Dusenburg
Auburn, Indiana

Friday, May 10 Early registration 4 PM Evening programs.
Saturday, May 11 Swap Meet, Equipment contest, Auction. Banquet with Awards.
Flyers will be sent to all IHRS and AWA members with information.

CALIFORNIA SCARS

Saturday, May 18th

Location: Lockhead Employees Recreation Club, 2814 Empire Ave., Burbank, Calif. Flea market 7 to 11 AM, Luncheon at 11:30 AM, Meeting and program in afternoon. This is one of largest west coast "meets". All members in area and Arizona will receive flyer in mail or write: Floyd Paul, 1545 Raymond, Glendale, Calif. 91201

MINNESOTA

AWA UPPER MID-WEST REGIONAL CONFERENCE

Saturday, May 18th

Another fine meet is planned for members in Minnesota and neighboring states. Location: Regency Plaza, 41 North 10th St., Minneapolis, Minn. Here is an opportunity to meet fellow collectors and enjoy fine programming and other activities. Flyers will be mailed to local members or write: Phillip Drexler, 1175 E. Ripley Ave., St. Paul, Minn. 55109

NEW YORK

ARRL Atlantic Division Convention, Fairgrounds, East Henrietta Rd. Rochester, N. Y. MAY 18 and 19

Large AWA Exhibit & booth. 18 acres of flea market-- largest in North-east.

NEW YORK

NEW ENGLAND, PENNSYLVANIA and NEW JERSEY

May 3-4, Atwater-Kent Museum, Oriente, N. Y. See writeup elsewhere in OTB.

SUMMER MEET -- Saturday, July 20, Breesport, N. Y. Details in June OTB.

NATIONAL HISTORICAL RADIO CONFERENCE
SHERATON INN, CANANDAIGUA, N. Y.

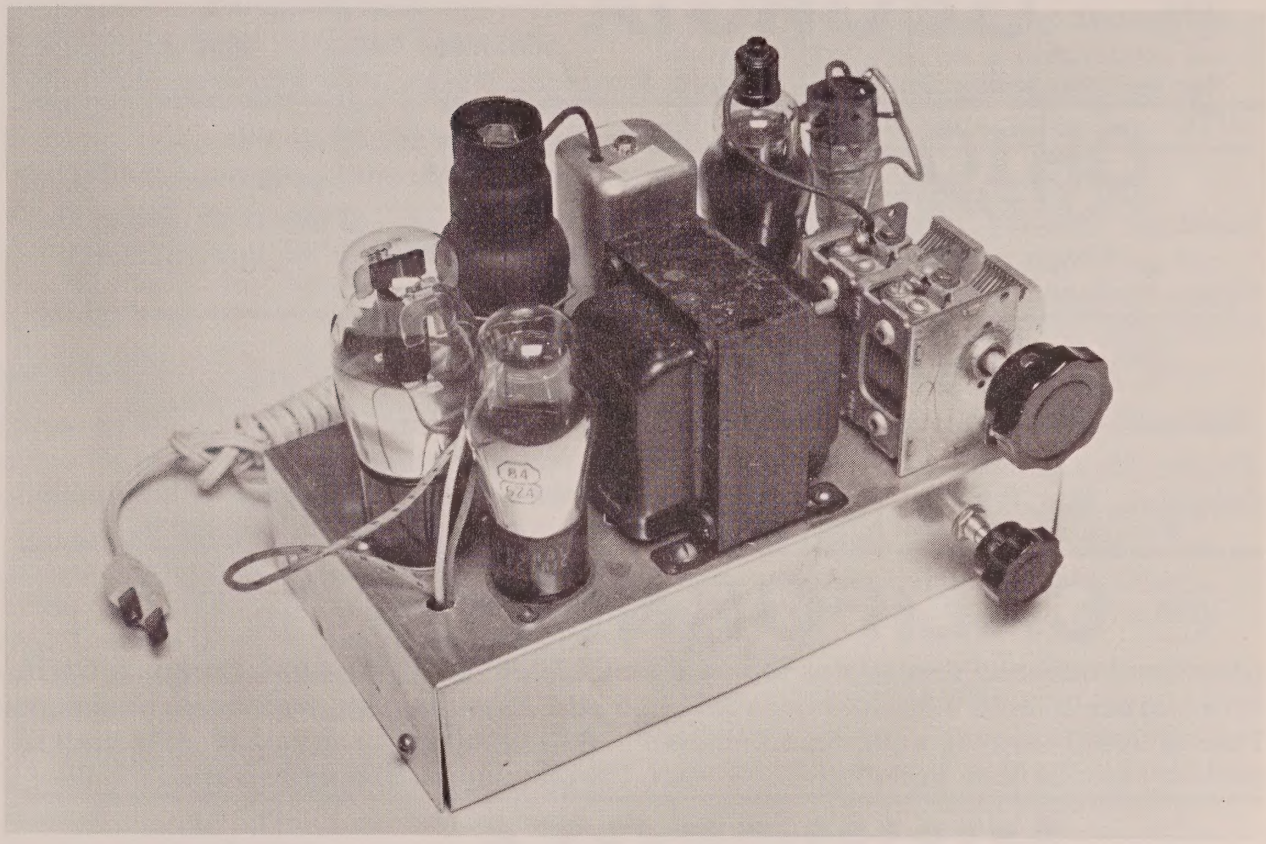
SEPT. 25 - 29, 1985
Wednesday thru Sunday

THE BROADCAST RECEIVER

Editors: Dick Ransley, Auburn, N.Y.
Bob Allen, Rochester, N.Y.
(Send all material to AWA, Holcomb, N.Y. 14469)

SOME FOUR-TUBE SUPERHETS

by Rodney Schrock WA3NMJ



Some years ago, before joining the Navy, while keeping one eye on the draft board so I could inform the recruiter of my status, I made a moderate income working for a local radio/TV repairman during the day and operating projectors at local movie theatres at night.

The shop was in an old house, the workbench was an old dining room buffet, mirror and all. There I sat with *Rider's* manuals, volt-ohmmeter, signal generator, and car battery eliminator, repairing radios.

A lot of old and new ones crossed my bench, but one that stirred my interest was a Philco "*Junior*". After I replaced the filter condenser, I looked under the chassis and things just didn't add up. It appeared to be a superhet but didn't appear to have enough stages. Checking the schematic, I found it had no IF amplifier, but rather a feed-back winding from the detector plate to the grid. Feedback was controlled by a trimmer condenser. So what I had was a regenerative detector. The set played remarkably well.

Several years ago, I decided to build several of these four tube superhet circuits and evaluate their performance.

For the first one, I picked an Atwater Kent 184 (Rider Volume 7, page 15). It was identical to the Philco Jr., but was more explicit as to parts values and voltages. For the IF transformer, I scrambled wound approximate fifty turns of # 26 enamel wire in the same direction as the transformer windings. My winding was spaced approximately ⅛" from the grid winding. For a regenerative control, I used a padder of approximate 200pf. maximum capacity.

[Continued on next page.]

SOME FOUR-TUBE SUPERHETS

On firing up the set, I noticed some performance, but as I increased the capacity of the feedback capacitor, reception decreased, which meant my output voltage was 180° from my input, so I reversed the connections of my feedback winding and got lots of regeneration.

The set performed as well as a Philco Jr. but as the grid condenser and leak were mounted on top of the IF can, I had a lot of hum pickup from that area. Also, the set oscillated two or three places on the dial. I removed the 6C6 oscillator and mixer circuit and replaced it with a 6A7 circuit which resulted in a sizeable increase in gain.

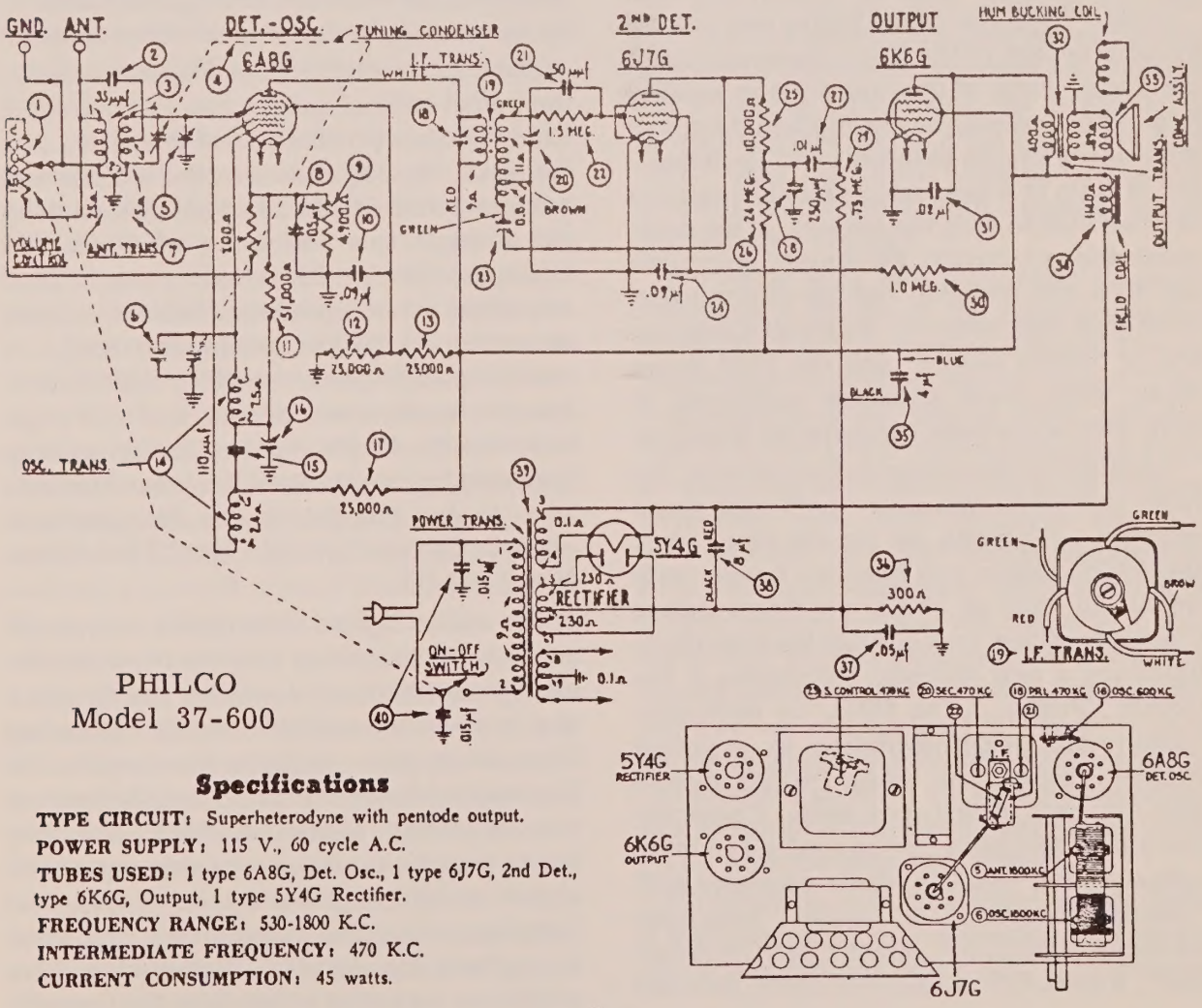
Philco must have had success with this circuit as they continued to use it until 1937, when the model 37-600 used a 6A8 oscillator-mixer and a 6J7 detector.

The next circuit I tried was from *Riders* Volume 7, page 5, the RCA model T4-8A, which uses a 6B7 as an IF amplifier reflexed as an audio amplifier with its diodes as detector. The performance of this set was about the same as the Philco Jr. circuit with the pentode oscillator-converter. Perhaps a different second IF transformer would have helped.

The best performer was the third and last set I built. It was also taken from *Rider's*, Volume 7, page 3, the Grunow Model 470. A 6F7 is used as an IF amplifier and triode detector. In reality, it is a five-tube set. The second IF transformer, I used W. E. 200J inductors resonating one with a trimmer to 455 kc. It lacks some selectivity but perhaps a copper disc between the two W. E. inductors would help.

Without AGC, the volume control had to be adjusted constantly. The sensitivity is great and on winter nights stations would come in with a boom without an antenna. The parts placement on this set are critical and the second version gave excellent results, the first having some oscillations.

My conclusion after building this series of interesting receivers is that they are economical and offered good reception in areas where signal strengths are about equal such as urban areas or in the country where there aren't local broadcast stations. The sets, with their limited selectivity and no AGC, performed quite well.



PHILCO
Model 37-600

Specifications

TYPE CIRCUIT: Superheterodyne with pentode output.
POWER SUPPLY: 115 V., 60 cycle A.C.
TUBES USED: 1 type 6A8G, Det. Osc., 1 type 6J7G, 2nd Det., type 6K6G, Output, 1 type 5Y4G Rectifier.
FREQUENCY RANGE: 530-1800 K.C.
INTERMEDIATE FREQUENCY: 470 K.C.
CURRENT CONSUMPTION: 45 watts.

The COMMUNICATION RECEIVER

Editor: Bill Fizette, K3ZJW
R.D. 1, Box 55, Henryville, Pennsylvania 18332
All correspondence requires SASE for reply

TYPE H.R.O. RECEIVER

THE HAMMARLUND COMET "PRO" RECEIVER

With this issue of the OTB we begin a column on classic communications receivers of the 1920's and 1930's, a topic of increasing interest among the AWA members. The receivers described will be restricted to those used for two-way communications purposes, not previously covered in the OTB. A subject as large as this cannot be adequately covered by only four columns a year, but we will include as much material as space will allow. The editor assures me that all correspondence will be welcome, and if a SASE is included a reply is assured. This first column reviews the classic *Comet Pro*, the predecessor of the famous Super-Pro.

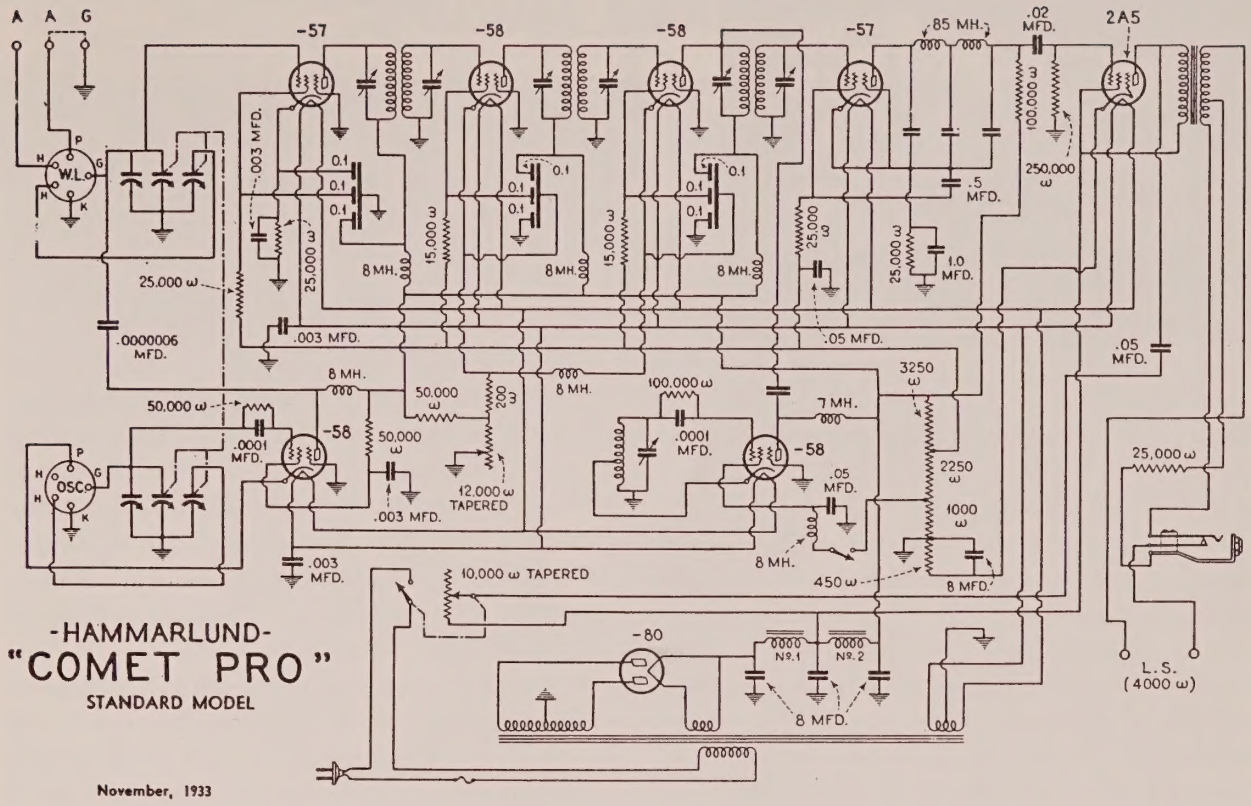
In early 1932 the United States was sinking into the depths of the Great Depression and the social fabric of the country was wearing thin. The economy was failing and there was little money for non-essentials and "*hobbies*", but in spite of a worsening situation nothing seemed able to stop the advance of the communications industry. Previously, going into the 30's, the mainstays of the communications field had been the National Company line of "*Thrill Boxes*" and the Pilot Super Wasp, while most amateurs continued to work with home-brew regenerative receivers.

Against this discouraging background, the radio manufacturers persevered and made progress. (Perhaps, as the old story goes, they didn't realize just how bad things really were.) In April of 1932, the Hammarlund Company of New York city had the temerity to introduce a new receiver, christening it the Comet "Pro"(1). The PRO, an eight-tube custom-built superheterodyne in a walnut cabinet, covered the range 14-200 meters with four sets of two coils each. Characteristics included band-spread tuning (an innovation at that time), a stable oscillator with "electron coupling", a special "long-wave oscillator" (BFO) for "sharp, clean CW reception", a quiet 227 output with phone jack and speaker connections, and provisions for the connection of an external power audio amplifier. It was billed as "super-sensitive", "super-selective", and with an extremely low noise level.

The Hammarlund Company, like the National Company, had been making their own components (they started in 1910), and were already marketing quality line of variable condensers, pre-wound plug-in coils, RF chokes, tube sockets, and other miscellaneous hardware. Heavy emphasis was placed on their extensive use of Isolantite as a dielectric. This material, while not new(2), was excellent for the purpose and was universally accepted.

The original receiver could be recognized by the walnut cabinet and the two external white band-set dials (OSC on the left and W.L. on the right). By July, however, the receiver was being pictured with the band-set dials peeking out through two half-moon windows, and equipped with vernier drives. (The original was either a developmental model or enjoyed an extremely limited production run.) A matching PRO power amplifier with built-in dynamic speaker was offered, and a 16-page bulletin with details was free for the asking. Requests for Hammarlund Precision Products were to be directed to the Hammarlund-Roberts Company, at 424 West 33rd Street, New York, NY.

The marketing and sales efforts were directed from the beginning towards the commercial, government, and military users, since that is where the available money was during those bleak days. In just a few months, the Hammarlund people realized that the product was becoming widely accepted, and they began advertising its use by ship operators, airport and BC engineers, police, hams, and "armies, navies, and commercial companies throughout the world". Testimonials were published, including letters from the Olympic



Games in Los Angeles and the Technical Editor of *Radio News*, extolling the virtues of sensitivity, selectivity, low noise level, and the band-spread tuning feature. In due course, a specific list of 56 prominent users was published.

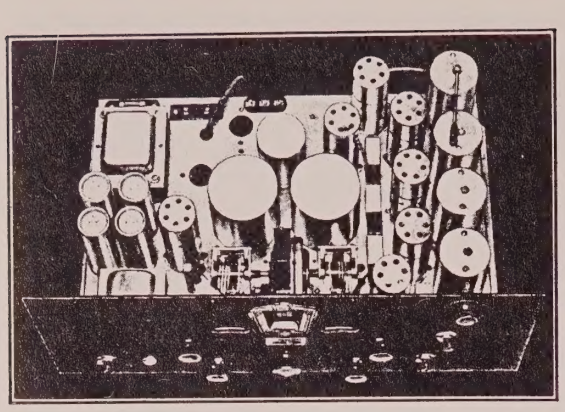
The competition stressed price. While the Comet "Pro" was sold to the user for a net price of $88.20 plus Federal excise tax, the FB7 could be purchased ... at least in the beginning ... with one coil set, without power supply, (and without tubes, since that's how things were done then) for $26.46. Hammarlund was quick to point out that theirs was a complete receiver (less tubes, of course), with power supply, and with all four sets of coils.

As with all good products in an advancing technology, improvements were made. In November 1932, the receiver was billed using new tubes (four 58's, two 57's, a 247, and an 80) and a new metal cabinet. The wood cabinet and a battery version were options.

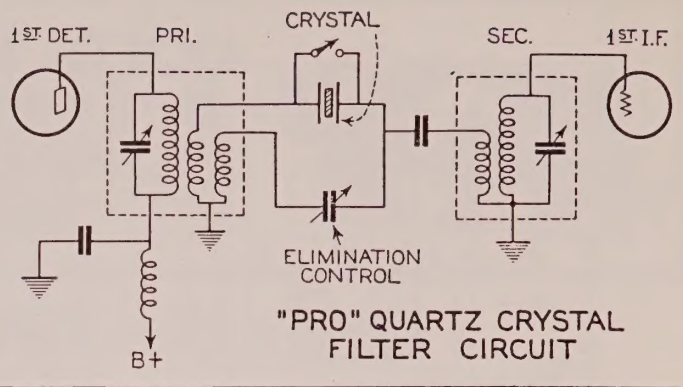
Significant changes were introduced in February, 1933 with the advent of air dielectric IF tuning condensers, and a variable control for the BFO. The latter took the form of a tuning "handle" which could be pivoted over a 90° range, and it became a prominent physical feature of the new, improved Comet "Pro". Collectors can easily distinguish the older version by the lack of any adjustments on the top of the IF cans, and no tuning control on the BFO can. The newer IF's had one capacitor adjustment at each end of the can. Hammarlund proclaimed their improved PRO as the only short-wave receiver with air dielectric IF tuning condensers, but it should be noted that National ran a full page ad in April 1933 *QST*, in color, showing THEIR air-tuned IF transformer, with "*velvet vernier micrometer tuning*".

A crystal filter was mentioned as easily adaptable to the circuit, but active promotion of the Hammarlund improved crystal filter for single-signal reception with the Comet "Pro" was delayed until September, 1933. (Readers may recall that Lamb's famous two-part article on single-signal reception was in the August/September 1932 issues of *QST*.) Hammarlund said that their filter differed significantly from the single-signal types of filters described in radio publications of the day in that both series and parallel selectivity were available simultaneously, with no loss of signal strength, and a patent was applied for. The filter could be easily added to existing models and the "elimination control" (a variable capacitor) was mounted in the upper right corner of the panel, with the filter switch below.

In November, AVC was added, and to make it less confusing to prospective purchasers (?), seven versions of the PRO receiver were

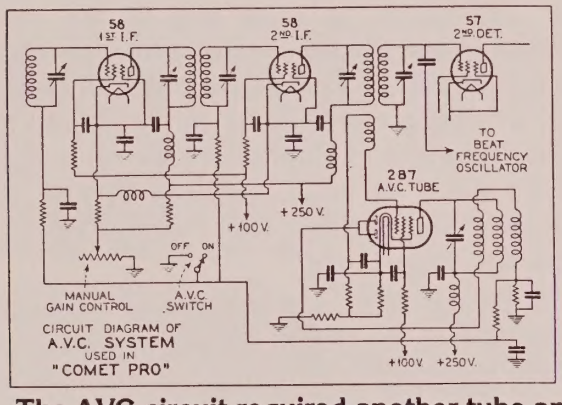


The AVC Model with the Crystal also installed



listed [3]; the standard PRO, the crystal PRO, each with or without AVC, two DC versions, and a battery model.

The DC models, for either 110 or 220 VDC, used three 77's, two 78's, and one 43; the battery version used four 77's, two 78's and one 42. In the AC sets the new 2A5 was used in the output, and the receiver was specified as having "½ microvolt sensitivity and 10 kc selectivity". The coil ranges had by now been expanded to include the 8-16 meter and 250-550 meter bands ... a total of 6 sets of coils ... available at $5.00 per set, and there was no longer any mention of the walnut cabinet.



The AVC circuit required another tube and coil can, and to make room for them the antenna terminals were moved to the rear of the chassis. For collectors who like to play the dating game, this change, plus the addition of a nameplate to the front panel under the bandspread dial ... with the words HAMMARLUND NEW YORK ... some time late in 1933, may be of help.

By February of 1935, Hammarlund was still advertising the PRO (complete with NRA stamp, a sign of the times), but competition was heating up. The RME 9 had been available since May, 1934, while the chief competitor, the National Company, had a whole collection of receivers for the communicator and SWL. These included the SW 3 (August, 1931), the SW 5 Thrill Box (November, 1931), the AGS (July, 1932), the FB 7 and FBX in February and April, 1933, and the HRO in October, 1934. For the PRO, lacking an RF stage and with dated design features, time was clearly running out. The then current thinking concluded that at least one RF stage, or preselector, was necessary for a good communications receiver, and having two (such as in the HRO) was even better.

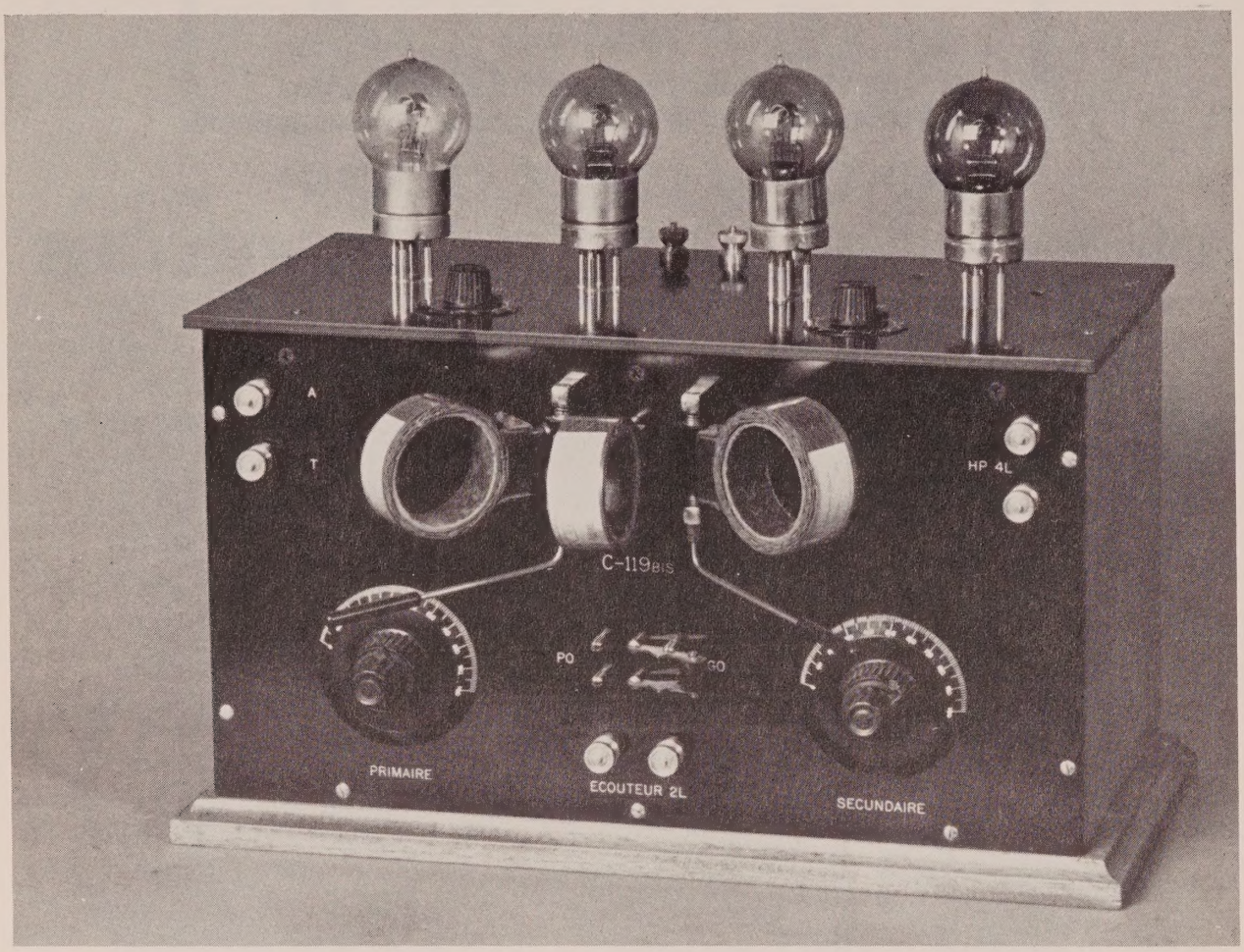
In due course Hammarlund subscribed to this philosophy and employed it in the Super Pro. In the meantime, in March of 1935 they introduced the continuously variable coupled IF transformer, stating that it was available for retrofit into existing PRO models, and would be used in the Super Pro, soon to be announced. In May, the circuit of the Super Pro with its 16 tubes and a two RF stages was published [4], but the receiver was not to be available until March, 1936. After that, the Comet "Pro" was relegated to history by the manufacturer and all promotional efforts were directed towards making the Super Pro a resounding success.

The Comet "Pro" lasted four years. For its day it was a superlative listening device, in no small part due to the use by the manufacturer of high quality in-house manufactured components, and constant efforts to keep the circuit abreast of new technology. The good reputation it engendered among the myriad of commercial, government, military, and amateur users world-wide prompted Hammarlund to carry the name forward to its famous successor.

REFERENCES:

1. **Winner, Lewis, *"The Comet "Pro" – A Short-Wave AC Receiver"*, Radio World, Jan. 14, 1933**
2. **Lescarboura, A.C., and Kruse, R.S., *"Isolantite–A Unique Material"*, QST, April, 1926**
3. ***"The Hammarlund Comet "Pro" High Frequency Superheterodyne"*, 4th Edition, Nov. 1933, The Hammarlund Manufacturing Company, Inc., New York, NY**
4. **Lamb, J.J., *"Looking Over the Circuits of the New Amateur Band Superhets"*, QST, May, 1935**

UNUSUAL EQUIPMENT



REPLICA MADE IN BELGIUM

Pictured is an excellent example of craftsmanship by AWA member Pieter Windey, ON6PW. It is a replica of a French receiver circa 1925 using four "R-5" valves. Following a common European practice, the tubes are externally mounted and are quite impressive when lighted.

ON6PW was most fortunate in finding an early sheet of bakelite panel which he engraved. The cabinet is made of mahogany. Note the honeycomb coils on the panel.

Pieter is co-author of the radio book reviewed on page 29 of the September '84 *OTB*. The book is available for $6.00 by sending International M.O. to:

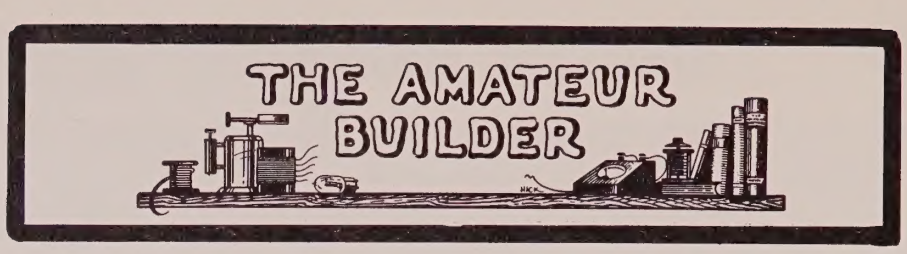
Cultura
B-9200 Wetteren, Belgium

PRODUCT CODE FOR RCA

The following code letters were used by RCA-Victor to identify their products in the late 30's and early 40's. Although not listed, it is believed the letter "M" was used for automobile receivers. I found this information in the *RCA-Victor Service Data*, Volume II, 1938-42, page 814.

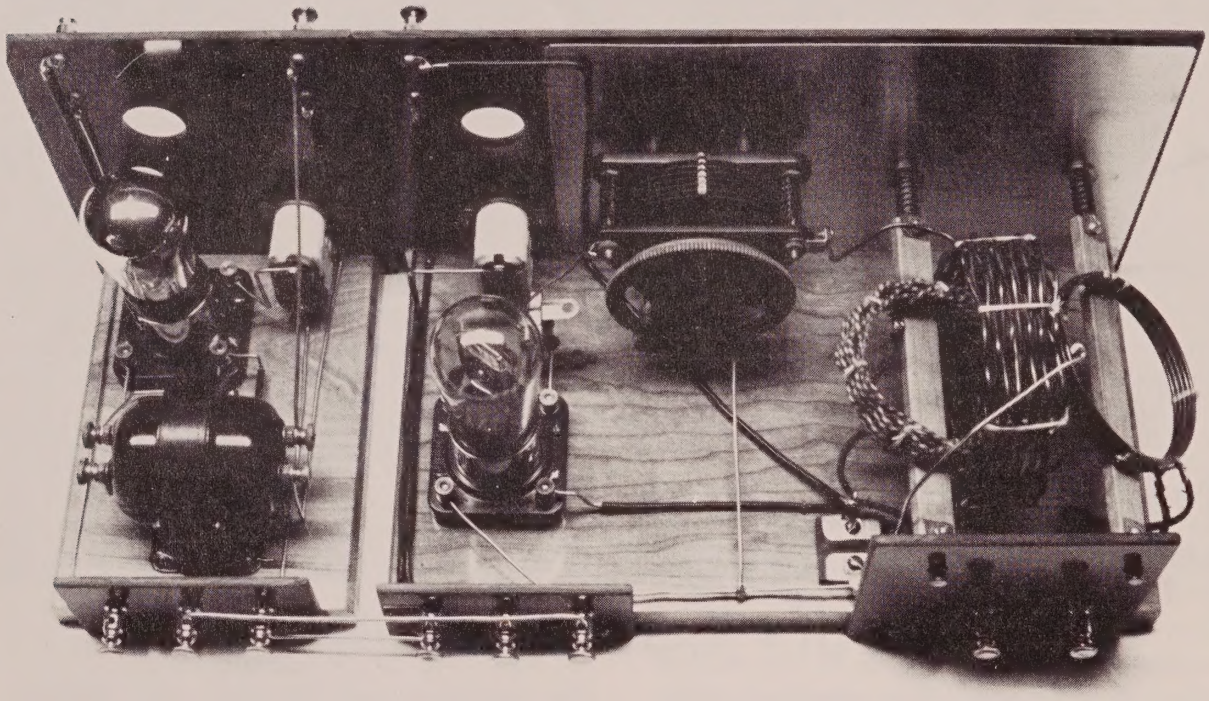
---- **Ted Hannah, K3CL**

BT-- Battery Table oscillator
BP-- Battery portable
CV-- Converter
K--- Console
O--- Portable Victrola
OSC- Oscillator
Q--- Export Table receiver
QK-- Export Console
R--- Record Player
RK-- Record Kit
RR-- Record Cabinet
T--- AC Table set
TT-- Television Table attachment
TRK- Television-Radio-Console
U--- Radio-Victrola
V--- Radio-Victrola
VA-- Wireless Record player
VHR- Home recording radio-victrola
X--- AC-DC table receiver



THE LOW LOSS TUNER, AMATEUR RECEIVER OF THE TWENTIES

by William Hurni, W3HWT

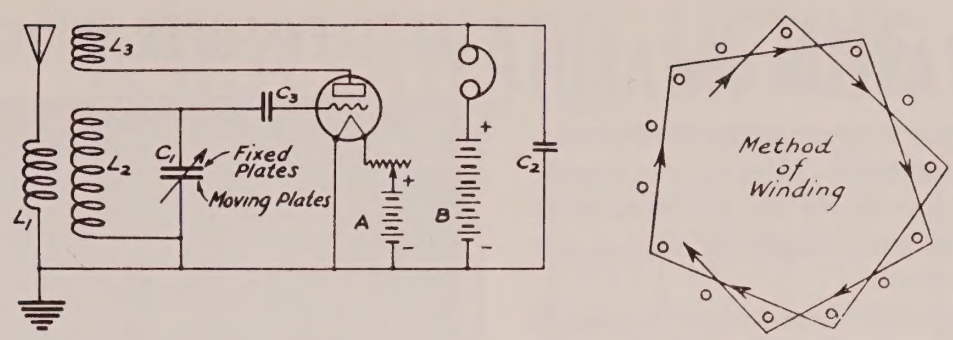


Receiver built by the author. Note simplicity of construction which gave excellent performance and accounted for its popularity. Members who plan to build this set are advised to read the original article in QST, February, 1924.

In the early twenties, the ranks of radio amateurs were expanding rapidly. However, because of pressure from commercial interests, the amateurs had been given what was thought to be useless wavelengths between 150 and 200 meters. It began to become apparent to amateurs using these wavelengths that wavelengths shorter than 200 meters might prove to be quite exceptional for long distance radio communications. Initially, the early gear which was suited for long wavelength operation was used on these shorter wavelengths. Its performance, however, was uninspiring, and some of the more astute amateurs realized that their receivers needed to be designed specifically for the shorter wavelengths. The catch phrase which described this new thinking about receivers was *low loss*. This term incompassed a number of design criteria.

In 1922 and 1923 several articles (3, 4, 5) appeared in QST describing various aspects of this *low loss* concept. A particularly interesting article by 9ZN was published in the December 1923 issue describing certain pitfalls to be avoided when designing and building a tuner for the short waves. The article actually described a receiver embodying the *low loss* concept which could be built with a little imagination. This was unusual, as QST articles of the time were generally long on concepts and short on detail.

The seminal article on *low loss* tuners appeared in February 1924 (6). In this article written by QST's technical editor, S. Kruse, three *low loss* tuners were described in sufficient detail that they could be built by the average amateur. The three tuners described were a modified Reinartz tuner, a 1BGF tuner, and a Schnell tuner. The 1BGF tuner



The 1BGF tuner. Capacitor C_1 was changed to a 250 mmf. G.R. unit with 2 moving plates removed. Coil L_2 was pruned from 24 turns to 18 which allowed the tuner to cover both the 80 and 160 meter bands.

A BEAUTIFULLY SIMPLE COUPLER, BUILT BY PERRY O. BRIGGS AND USED AT 1BGF

Note the special shape of the condenser plates, suggested by Mr. Hassel; and also the low-resistance secondary coil. This rig has defeated and replaced several expensive tuners.

L1—Primary coil, 6 turns of No. 12 D.C.C. wire wound on 3" tube and then tied together with thread to make it self-supporting. The coil is secured to a shaft so that the coupling to the secondary can be varied by tilting the primary coil.

L2—Secondary coil, basket wound around 14 steel wire pegs set into a board on a 4-1/8" circle. The coil looks as if the wires are twisted together but this is not correct; the winding is made by passing the No. 12 D.C.C. wire outside of one peg and then inside of two as shown in the small sketch. The wire pegs are 3/32" thick. Before removing the winding from them the turns are secured with waxed thread.

L3—Tickler coil, 12 turns No. 18 bell wire wound on 14 pegs set in 2-7/8" circle. This coil is hinged also, being tilted by the tickler shaft.

C1—THE ONLY TUNING CONTROL, Fada variable condenser originally having capacity of 500 micromicrofarads (.0005 mf) but with moving plates cut as suggested by Hassel.

C2—Fixed mica condenser, capacity 1000 micromicrofarads or .001 microfarads.

C3—Dubilier grid condenser—no leak used.

was by far the cheapest and easiest to build, a fact attested to by its acceptance among amateurs. As revealed by QSL cards from the period, the 1BGF tuner was already in wide use in 1924, and by 1925, over 25% of the amateur stations sampled were using the 1BGF tuner by name. It is noteworthy that few stations were using commercial receivers. Most stations were using some form of *low loss* tuner with a rare Grebe or Zenith receiver noted.

Tuners built just a few short years before were designed to operate on much longer wavelengths. They were characterized by large coils with many taps so as to cover a wide range of wavelengths. A typical range might be from 200 to 700 meters with some sets such as the Grebe CR-9 covering from 150 to 3000 meters. These coils had large distributed capacity and significant ohmic resistance. Many variable condensers had poor dialectric insulating material used in their construction.

These shortcomings led to significant losses, especially on the shorter wavelengths. The new *low loss* tuners covered a narrow wavelength range, 80 to 150 meters being representative. There were no taps on the tuning coil as none were necessary to cover the desired tuning range and the coils were wound with heavy solid copper wire. The coil in the 1BGF tuner was basket weave wound and thus had an air core. In this way, losses associated with the coil form, varnish, etc were avoided.

The new tuners were all capacitor tuned which was superior to variometer tuning on the shorter waves. Capacitors with high quality insulating material were considered essential. Even the tube socket did not escape scrutiny as porcelain was recommended. Loose coupling of the tuned circuit to the antenna was another aspect of the *low loss* concept. This reduced coupled resistance to the tuned circuit and thus increased the selectivity of the tuner, a feature which was becoming essential for an acceptable amateur receiver. The reduction of losses not only enhanced the *loss* tuners.

In essence what was involved was taking the conventional Armstrong regenerative circuit and building it with attention to detail in avoiding losses that in the past degraded the performance of both commercial and amateur receivers. No new circuits or new concepts were employed, just good engineering practice as applied to receiving on the short waves. If these guidelines were followed, spectacular results could be achieved.

The commercial manufacturers of radio apparatus seemed to be technically behind the amateur fraternity. For example, 1923 saw the introduction of the Grebe CR-13, which was billed as an amateur receiver (1). It covered a range of 80 to 300 meters; however, many of the features known to reduce losses and improve performance were not employed. It also used a non regenerative detector.

In the author's hands, the Grebe CR-13 does not perform at the same level as the 1BGF tuner. In fact, it was not until 1926 with the introduction of the Grebe CR-18 (2) that performance equivalent to the 1BGF tuner was achieved. It is also interesting to note that the article by K. Hassel (5)

[Continued on next page]

The TAYLOR AWARD

What is today's most popular form of electronic communication? Television, of course, and it is most appropriate that AWA recognize the history and early equipment used in this important medium.

Henceforth, an annual award will be given at future AWA Conference to a member who has done outstanding research in the field of television. This may be in the form of documentation or preservation.

It is most appropriate that the award be given in the memory of AWA member **John P. Taylor**, Vice-President of RCA's commercial equipment division.

John was an avid historian, author of several books and numerous articles on the subject of radio and televison. He was Editor of RCA *Broadcast News* and contributing editor to the magazine *Television Age* in which capacity he promoted television history and development.

Mr. Jack Davis has established a fund to perpetuate the award. A committee will be selected to review potential recipients.

CROSLEY SUPER BUDDY BOY

This odd looking table model broadcast receiver was made by the Crosley Corporation. It is their Model 122 and known as a "*Super Buddy Boy*". The owner, Henry Ankeny, WØFSY of Clarinda, Iowa, says it required little restoration and works fine. He also has another "*Buddy*", Model 54G with the same type cabinet except is of "tombstone" style.

[Cont. from previous page]

came out of Chicago Radio Labs, yet no such commercial set embodying the *low loss* concept was forth coming from CRL. This state of affairs was most likely due to manufacturing lead times, market size and product pricing. Of course the lack of good commercial receivers in no way slowed the progress of the resourceful amateur.

How well did these new *low loss* receivers perform? Did the synergy of small changes, this attention to detail, result in an improved tuner? With this question in mind, I set about building a 1BGF tuner. The project was approached with grave doubts about the level of performance that could be achieved, because my boyhood experience with regenerative shortwave receivers in the 1950 had not been very encouraging.

Following the advice proffered in Mr. Hassel's article (5) I included a separate one step audio amplifier of conventional design with the tuner. Figure 1 shows the circuit diagram of the 1BGF tuner with the technical data required to duplicate the set. Figure 2 shows a rear view of the tuner that was built from the article. Two modifications were made. An aluminum sheet was placed behind the bakelite front panel. This was required to eliminate annoying hand capacity effects. A vernier control tuning capacitor was found to be necessary for acceptable tuning on the amateur bands. Capacitor C1 and coil L2 were pruned slightly so that the tuner covered a range of 80 to 150 meters.

The performance of this tuner on the 80 and 160 meter amateur bands is exceptional. Using a 6 volt motorcycle battery for the filaments and a simple B battery eliminater delivering 22½ and 90 volts, I have heard and worked stations all over the United States. Attention to detail proved important not only in building the tuner but also in selecting the detector tube. I used a UV 200 tube which, selected from a group of eight such tubes, gave the best performance. The audio tube was not critical to performance; virtually any 201 tube will work satisfactorily.

Head phones also varied in performance. I found a set of Brandes Superiors to give the best results. Unlike modern receivers, this little tuner requires a significant amount of operator skill to achieve optimum performance. This skill is obtained after a few evenings of operation on the air. In experienced hands, it compares well against the modern communications receiver. It also does quite well with SSB signals. I do not believe it is widely realized the type of receiver performance that was available to amateurs in the mid-twenties. Do not be fooled by the simple circuit and rudimentary appearance! The amateur of the twenties had a very sensitive and selective receiving instrument with which to explore the limits of the ether.

A.W.A. AWARD LISTING

by George Scarbar

MEMORIAL AWARDS			
Year	Tyne Tube Award	Elle Craftsman	Thompson Best/Show
1980	Patrick Dowd	Alan Douglas	- -
1981	John Stokes	Bob Mc Intyre	- -
1982	Lauren Peckham	Lincoln Cundall	- -
1983	William Condon	- -	Ralph Muchow
1984	- -	Mike Katzdorn	J. and F. Kreuzer
1985			
1986			
1987			

HOUCK AWARDS

The time has come again for members to select nominees for the Houck Awards. The nominee for documentation must be a regular AWA member who has written several original articles on radio development/history in the OTB or other publications (this could include a book on related subjects).

The nominee for preservation should likewise be an AWA member who through personal accomplishment has acquired and preserved by documenting, an outstanding collection of radio artifacts. (This automatically excludes individuals who regularly buy and sell items.)

Review member's work in past issues of the OTB (or other historical sources) and send your selection(s) to the Awards Committee giving the reason(s) why your nominee(s) should receive the Award(s).

Robert Morris, Chairman
Sunset Lake Road, RFD #1
Sparta, New Jersey 07871

Note: Awards are presented at the Annual Conference.

Year	OT TX contest	Houck Awards	
		Document	Preserve
1971	W2LV	Thorn Mayes	- -
1972	W2LV	Bruce Kelley	Ed. G. Raser
1973	W2LV	Gerald Tyne	Robert Merriam
1974	W2LV WØTRF	Lou Moreau	Warren Green
1975	W1DM	William Breniman	Stuart Davis
1976	W1DM	Howard Schrader	Wayne Nelson
1977	W1DM	Ralph Williams	Vance Phillips
1978	K4TS	Don de Neuf	Lauren Peckham
1979	W1DM	I.Coggle-shall	Joseph Pavek
1980	W2LV	L.Espen-schied	Ralph Muchow
1981	K4TS	Alan Douglas	John Caperton
1982	K4TS	- -	Fred Hammond
1983	W2LV	Kaye Weedon	Patrick Dowd
1984	K4TS	Floyd Paul	Rex Matlack
1985			
1986			
1987			

Transmitter Construction Award			
1980	William Shaw	1984	A. C. Stoddard
1981	- -	1985	
1982	John Haught	1986	
1983	William Hurni	1987	

THE VACUUM TUBE

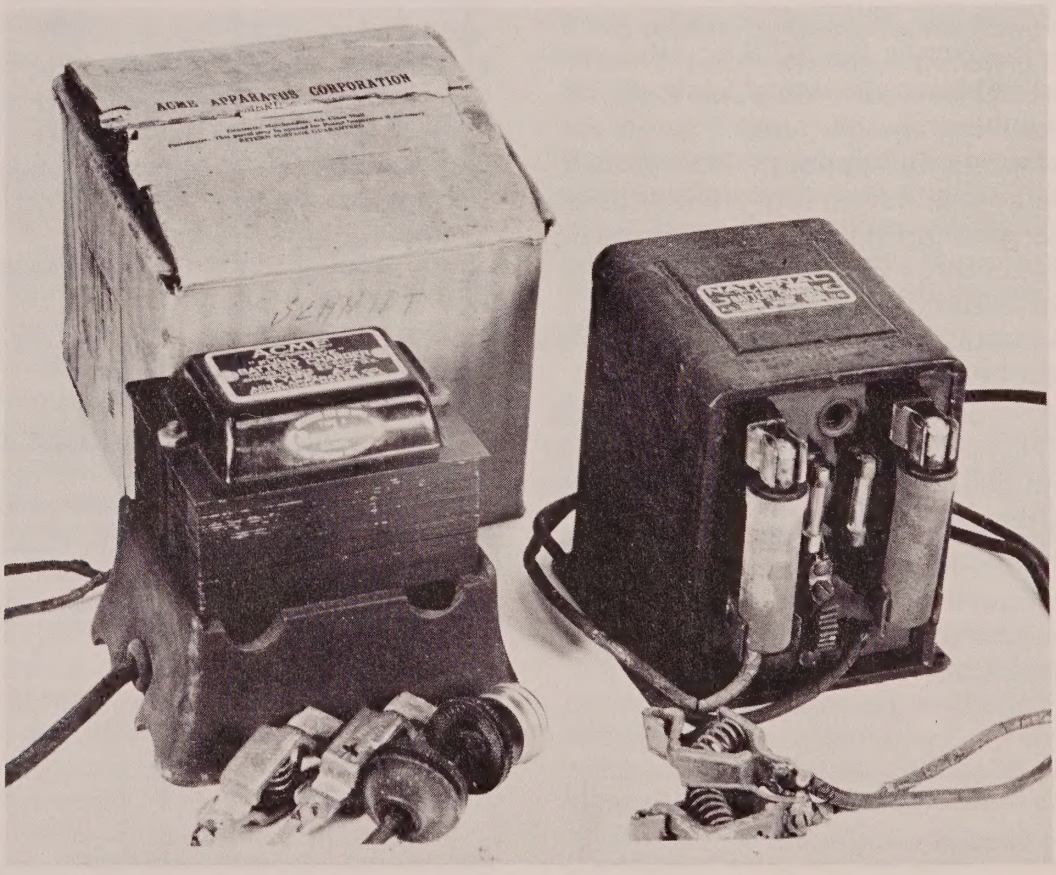
Editor: Bro. Patrick Dowd, F.S.C., W2GK

THE RAYTHEON "A"

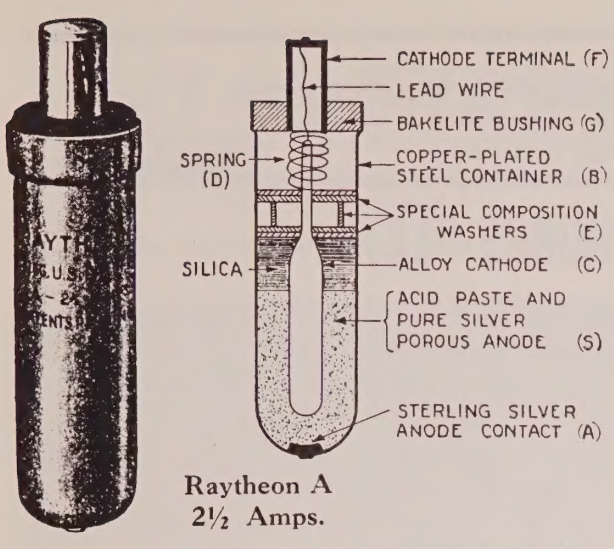
by Alan Douglas

In the history of rectifiers, the Raytheon "A" cartridge has one of the shortest chapters: a bare five months of commercial use. It promised a revolution in battery chargers and A-supplies, being compact, efficient, and low-priced, and a number of manufacturers designed equipment around it, such as National, Acme, Briggs & Stratton, Mayolian, and Thordarson.

The story begins in early 1923, when Mr. Henri André of Paris began experimenting with metallic colloidal suspensions as rectifiers. After 2½ years he had found that colloidal silver in strong sulfuric acid with a silver anode and inert cathode would work well, and had joined La Radiotechnique, a well-known tube manufacturer, which brought out a battery charger using his principle in October 1925. André sent a communication to the Acade'mie des Sciences in August, and read a paper to a radio society in December (Socie'te' des Amis



Acme and National power supplies using Raytheon "A"



Raytheon A
2½ Amps.

A REVOLUTIONARY SCIENTIFIC ACHIEVEMENT in high current, low voltage rectification

Raytheon A-2½ amps. is revolutionary in principle, in construction, in performance. It is an unbreakable metal cartridge, compact and simple, without liquids or filaments.

Above all, it is The Efficient Rectifier. Its operating cost over the period of a year, compared with that of other types of rectifiers designed for similar uses, will show a cash saving of many dollars.

Raytheon A-2½ amps. was invented by Monsieur André of La Radiotechnique in Paris, and developed by the Raytheon Research Laboratories with his co-operation.

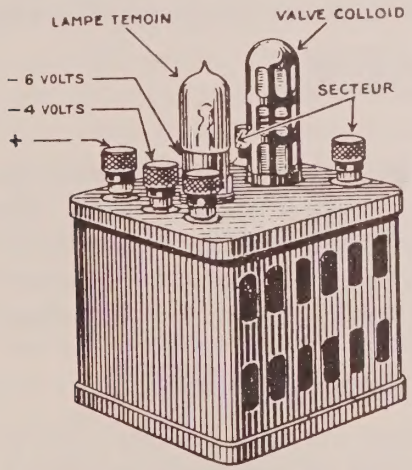
Battery chargers and "A" power units using this remarkable rectifier will bear the same seal of approval that distinguishes all Raytheon-equipped power devices.

de la T.S.F., published in their journel *L'Onde Electrique* in January 1926).

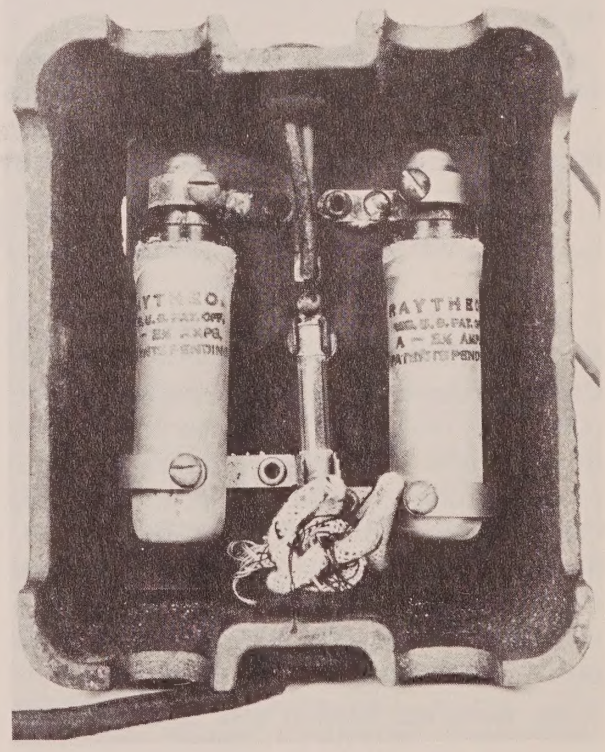
La Radiotechnique's new charger was advertised for only one month, but that was enough to attract the attention of Laurence Marshall, who headed Raytheon. On a European trip, he persuaded André to return with him and develop his rectifier at Raytheon (one of the few companies doing research at that time), as a workable low-voltage rectifier was in great demand for radio A-supplies and battery charging. By June 1927 André had perfected his device. With suitable fanfare, it was introduced to the radio public "*in spite of many heated arguments between the few of us determining Company policy*," to quote C. G. Smith, inventor of the S-tube and BH rectifiers.

After quite a number of A-eliminators had been sold, the reason for Smith's distrust became evident: if the materials used were not sufficiently pure, the rectifiers could explode. Complaints multiplied, and because one woman blamed her miscarriage on her exploding radio, the "A eliminator" was soon known in the factory as the "*baby eliminator.*" A smooth-talking salesman was dispatched with a satchel of cash and settled all complaints but one (which resulted in a $10,000 damage verdict; very many of those would have wiped out the company). After October, Raytheon returned to advertising only tubes, and André presumably returned to Paris.

References:
L'Onde Electrique, Oct. 1925, pp 454-55. Jan. 1926, pp 28-46.
Radio Broadcast, July 1927, pp 143-45.
Radio News, Aug. 1927, pp 128-29, 176-77.
The Creative Ordeal, Otto J. Scott, Atheneum 1974 (this history of Raytheon quotes a 1967 interview with Marshall and a 1951 manuscript of Smith. While Smith's statements are usually accurate, Marshall's are anything but).



La Radiotechnique's original charger using Andre's colloid valve. The lamp functioned as an ammeter and current regulator.



Closeup of Type "A" rectifier.

TELECOMMUNICATION

Editor: Don de Neuf, WA1SPM

MORE ON THE NORGE "LBT"

The article on the NORGE in the last issue included some questions. A fine supply of information on these came from Kaye Weedon and Bob Gleason. Space limitation requires that we condense this as much as possible. Additional information can be drawn from Gottwaldt's fantastic chapter in the 1927 book "*The First Flight Across The Polar Sea*" by Amundsen and Ellsworth.

The wireless equipment aboard the NORGE was acquired from the Marconi Company in London and assembled and installed in the ship in Rome. The VT CW-ICW transmitter was comprised of two 250 watt valves in parallel operating on 1400, 900 and 600 meters, Hartley coupled.

The receiver used interchangeable coils, with a tuner coupled to a "*standard seven valved detector with note filter and double low-frequency magnifier – eleven lamps in all*". A Marconi direction finder using two large fixed frame loops was installed, and the radiogoniometer operated from about 600 to 1800 meters and worked very well. Also on board was one of Marconi's newest type short-wave receivers with a range of 10 to 100 meters.

Operation was quite satisfactory but unfortunately just as the NORGE made a steep ascent out of Kings Bay, the SW set fell to the floor and became inoperative. The antenna was a trailing-wire type, 100 meters long. Some trouble was experienced in low level flying: The ice built up on the antenna as thick as a mans' arm and broke under the weight. This also reduced radiation considerably.

Power, both high and low voltages was derived from a unique generator arrangement inside the ship. The generator was driven by a shaft geared to small air propellor mounted outside the cabin. The speed of the generator could be varied manually by a mechanical device which changed the direction the propellor blades faced the wind. Much trouble was experienced with icing of this propellor.

Good communication seems to have been enjoyed with a number of European stations enroute from Rome and at the North Pole, and for some distance beyond. But apparently no communication could be carried out once Alaska was reached. The ship landed in the wilderness near Teller. Here Gottwaldt amazingly found an old abandoned ship's spark station which he resurrected and immediately struck up communications with Nome. Operation continued with these facilities for two weeks, and thousands of words of the NORGE's fabulous voyage were transmitted to the world.

TV SURVEY BY H_2O PRESSURE

In the early days of TV broadcasting a unique method was proposed to measure the size of the audience to various programs in one of the large US cities. This comprised a sensitive system for continually recording the water pressure at numerous strategic spots throughout the city. It was assumed, probably rightfully, that at an intermission in a program, or at its end, many viewers would take the opportunity to leave the TV set to draw a glass of water or to satisfy nature's call.

An elaborate method was established to determine the number of residences involved when a sudden drawing of water was measured by means of water pressure drops. But, the survey never got off the ground because it would also prove the number of viewers who were not exposed to a sponsor's commercials!

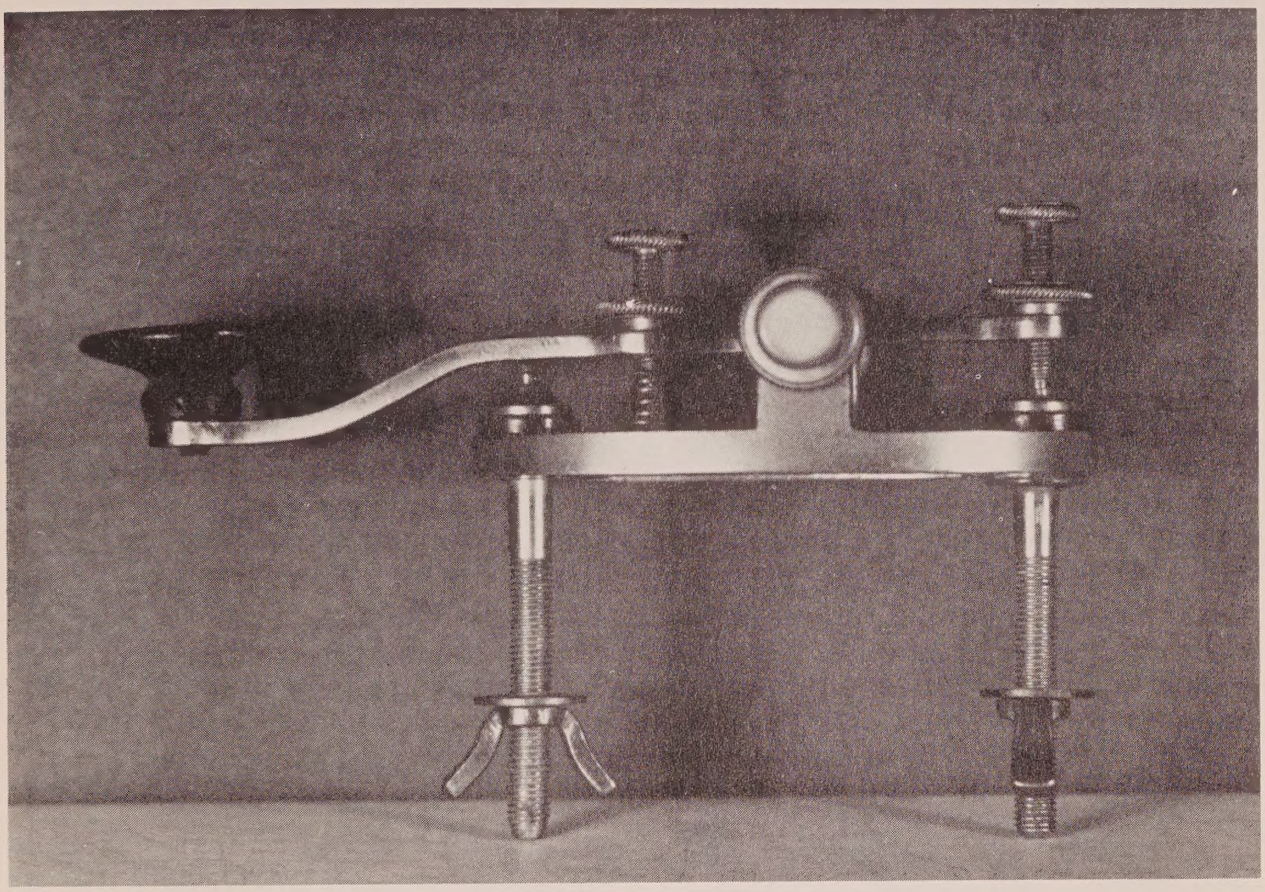
BREVITY IS THE WORD

Members who have the urge to tell their exploits in the radio field should write seeking approval and indicate length of article.

I always believe in quality – not quantity, that a good story is best recounted in a minimum of words. *--Editor*

KEY and TELEGRAPH

Editor: Lou Moreau, W3WRE
305 N. Llanwellyn Avenue, Glenolden, PA 19036
All correspondence requires SASE for reply



Leg key in AWA Museum [Photo by Frank Merriwell]

QUES: *What is a leg key? What practical purpose did it serve?*

ANS: The leg key is actually the oldest form of key. The first was the *Lever Correspondent* introduced in November, 1844 by Alfred Vail. There were no binding posts on early keys. The connections were made with long legs (bolts) going through the operating table with the wiring on the under surface. In fact, binding posts were generally not added until the 1870's.

Another type was the semi-leg. This is a key with short legs without the wing nut and used on KOB sets (Key-On-Board). The reason is quite obvious. The KOB's were portable while the full leg keys were not.

The leg style became popular again during the early wireless spark era. By having the wire connections to the key under the operating table, extra protection was provided. Binding posts and external wiring proved dangerous since high power was frequently used in the keying circuit. Examples would be the 10 kc. deForest keys and the standard WWI Boston Navy Yard keys.

Collectors can designate keys as: *Leg, Semi-leg* and *Legless.*

QST HAM-ADS

QST has initiated a vintage sell-want section in its *Ham-Ad* column. Previously, it had been necessary for one interested in vintage equipment to scan hundreds of ads looking for old gear. It is now no longer necessary.

QST magazine is one of the world's largest radio publication with tens of thousands of readers. It should be pointed out however, QST, like other magazines and club publications, cannot verify the integrity for personal advertising. Want more info? Write: QST, 255 Main Street, Newington, Connecticut 06111.

AMATEUR RADIO

Editor: Ken Gardner, W2BGN
42 Oakdale Avenue S., New Hartford, NY 13413
All correspondence requires SASE for reply

RESULTS OF 1929 LOW POWER CONTEST

The AWA Annual 1929 Vintage QSO Party is growing every year. This is this the time when contestants MUST use self-excited transmitters of 1929 vintage (or earlier) with 10 watts or LESS input.

The Hartley oscillator still remains the most favorite followed by the TNT and TPTG. It is interesting to note that more stations are using vintage regenerative receivers.

Operating conditions were only fair with very heavy static (thunderstorms) the second evening. Alex, W1BPI, is to be praised for operating under a serious handicap: he rebuilt his entire xmtr during the contest ! Pictures and description of gear used in a future OTB. 73, "Bud", K2LP

Call	#QSO	Equipment (TX es RX)
W1SZJ	8	'45 Hartley- 10 wts.
W1BVL	4	245 TPTG- 10 wts.
W1BPI	1	210 TNT- 5 wts.
K2LP	10	'10 TPTG 10 wts.
W2BJI	17	245 Hartley, 3-tube regen.
W2HIN	13	1929 Hartley, 3-tube TRF
W2AN	10	UX-112-A Hartley, 5 wts.
W2HBE	9	210 Hartley, 10 w., 2-tube rx.
W2VDI	17	'45 TNT, 9.5 w., FB-7 Rx
K2RY	9	210 Hartley, 2-tube regen.
W2IEG	5	TPTG-10 w., Grebe CR-18
K2MP	5	245 Hartley- 10 wts.
KA2JAJ	1	TPTG
W3PVG	5	510 (deForest) 7.5 wts.
W4COC	11	210 TNT- 6 wts.
W4VBX	9	210 TNT- 9 wts.
W4NM	1	112-A TNT, '24 det., 27 aud.

Logs were not received from the following participants: W2FW, KA2KGM, W2AFE, WA2UMP, W3OER, N4EE and VE3BDV. N3AYU ran 50 wtts. input.

News clipping Feb. 17, 1936

Hiram Maxim, Inventor, Dies

LA JUNTA, Col. (AP)—Hiram Percy Maxim of Hartford, Conn., internationally known inventor and mechanical engineer, died in Mennonite Hospital here today of a throat infection.

He was en route by train to the West Coast with his wife last week when he became ill. He had been in the hospital since.

The inventor was 67 years old and was born in Brooklyn, son of Sir Hiram Stevens and Louisa Jane Budden Maxim. When he entered the Massachusetts Institute of Technology he was the youngest student in his class. He was graduated in 1886.

Maxim was electrical engineer for a number of concerns and later organized his own firm to manufacture ordnance articles of which he was the inventor. He invented, among other articles, the Maxim silencer.

He also was president of the American Radio Relay League and the International Amateur Radio Union. In 1933 his book, "Life's Place in the Cosmos," was published.

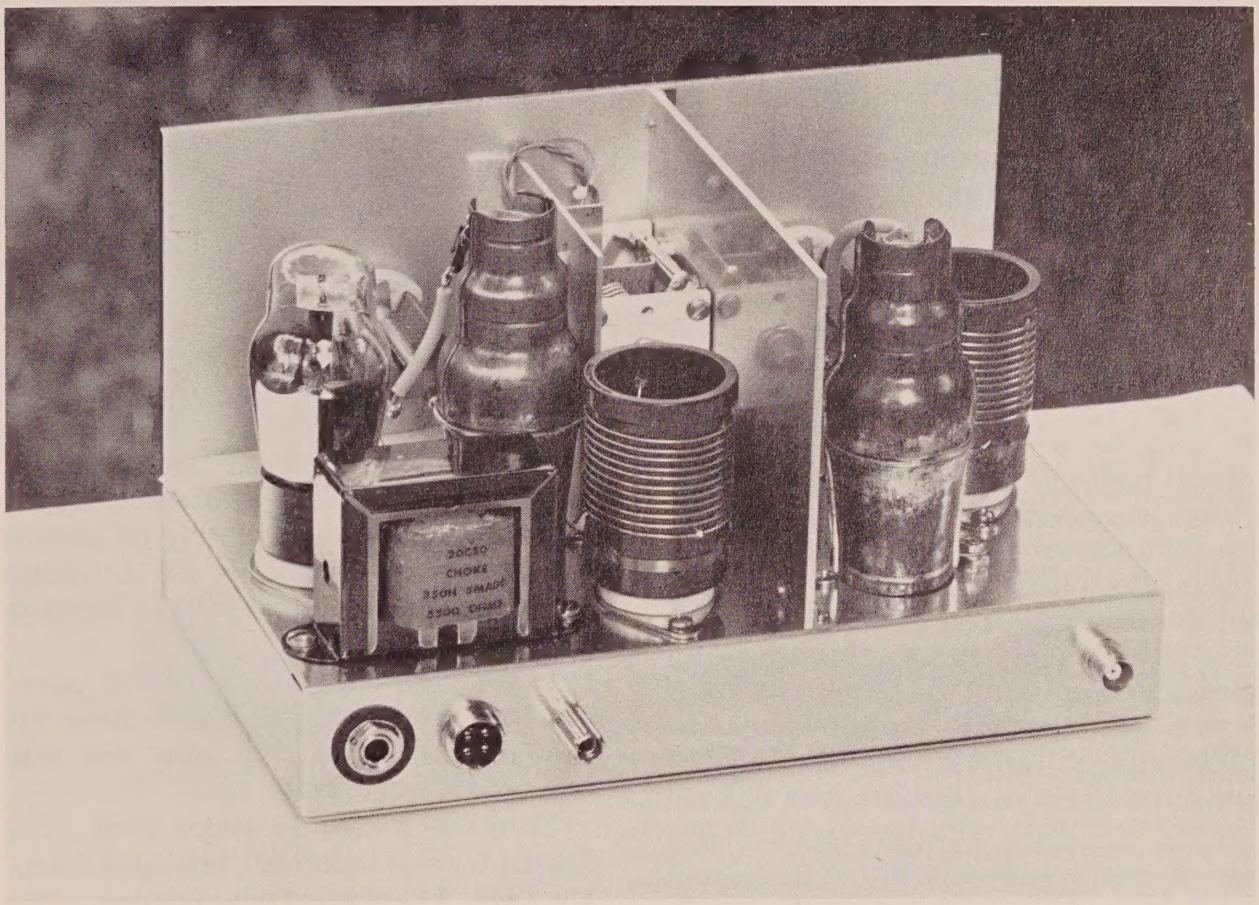
Prior to turning his inventive genius to ordnance and firearms, Maxim designed automobiles. The first, produced in 1897, ran thirty miles on one charge, and had a maximum speed of twelve miles an hour.

Maxim was born in Brooklyn September 2, 1869. He and his brother Hudson contributed the Maxim gun, smokeless powder and other inventions which helped to modernize warfare.

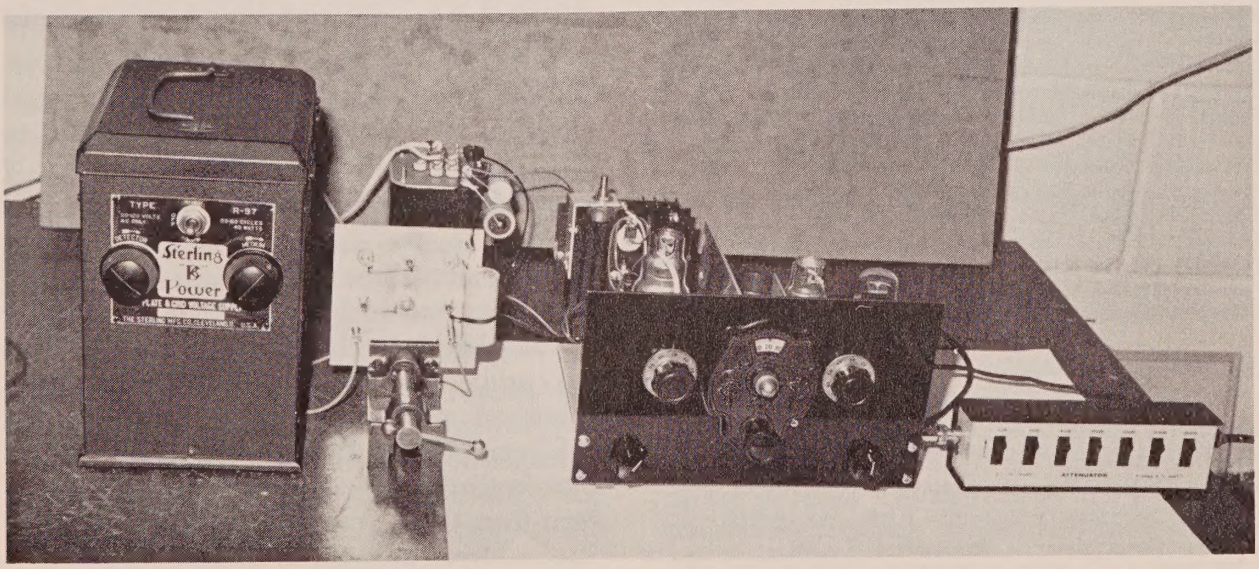
To my friends: I solemnly swear not to use the name Tom Swift.....

3-TUBE SET AT W2HIN

This well constructed set was made from an article in the 1937 *A.R.R.L. Handbook* by Gil Lahullier of Clifton, New Jersey. Tube lineup: 58 RF, 58 Det. and 56 aud. Gil says the set has excellent sensitivity, smooth regeneration control and is unusually stable. This may be partially attributed to the 200 volt regulated "B" supply. To be on the safe side, W2HIN also uses regulated 2.5 volts on the filament. Parts were salvaged from old sets and the scrap box.



A neat layout. A shield is placed between detector and RF stage.



Temporary setup for checking. Note voltage regulated power supply.

Meet the Collectors

COLLECTING ARRL AMATEUR HANDBOOKS

by Morris Rosenfeld, KA2JAJ

In 1925, F. E. Handy, Communication Manager for the American Radio League, decided to write an operating manual for the radio amateur. When the book was completed and published in 1926, Mr. Handy would not have believed that his little book of 176 pages, plus advertising, would grow in 58 years to over 1000 pages. In addition, the format would grow from 6½" to 9½" to over 8 by 10" and have a new name: *The ARRL 1985 Hand Book.*

First Edition, November, 1926	5,000 copies
Second Edition, First Printing, January, 1927	5,000 copies
Second Edition, Second Printing, April, 1927	10,000 copies
Third Edition, First Printing, October, 1927	10,000 copies
Third Edition, Second Printing, April, 1928	10,000 copies
Fourth Edition, December, 1928	10,000 copies
Fifth Edition, May, 1929	10,000 copies
Sixth Edition, First Printing, November, 1929	10,000 copies
Sixth Edition, Second Printing, March, 1930	10,000 copies
Sixth Edition, Third Printing, June, 1930	7,000 copies
Seventh Edition, October, 1930	25,000 copies
Eighth Edition, April, 1931	25,000 copies
Ninth Edition, First Printing, January, 1932	30,000 copies
Ninth Edition, Second Printing, September, 1932	10,000 copies
Tenth Edition, First Printing, January, 1933	30,000 copies
Tenth Edition, Second Printing, July, 1933	8,750 copies
Eleventh Edition, First Printing, January, 1934	30,000 copies
Eleventh Edition, Second Printing, May, 1934	13,000 copies
Twelfth Edition, First Printing, November, 1934	40,000 copies
Twelfth Edition, Second Printing, July, 1935	8,000 copies
Thirteenth Edition, First Printing, October, 1935	40,000 copies
Thirteenth Edition, Second Printing, February, 1936	33,200 copies
Fourteenth Edition, First Printing, October, 1936	40,000 copies
Fourteenth Edition, Second Printing, February, 1937	28,300 copies
Fifteenth Edition, First Printing, October, 1937	40,000 copies
Fifteenth Edition, Second Printing, January, 1938	25,000 copies
Sixteenth Edition, November, 1938	60,000 copies
Seventeenth Edition, First Printing, November, 1939	40,000 copies
Seventeenth Edition, Second Printing, January, 1940	25,000 copies
Eighteenth Edition, First Printing, November, 1940	40,000 copies
Eighteenth Edition, Second Printing, January, 1941	20,000 copies
Eighteenth Edition, Third Printing, June, 1941	10,000 copies
Eighteenth Edition, Fourth Printing, September, 1941	5,000 copies
Nineteenth Edition, First Printing, November, 1941	60,000 copies
Nineteenth Edition, Second Printing, March, 1942	15,000 copies
Nineteenth Edition, Third Printing, April, 1942	25,000 copies
Nineteenth Edition, Fourth Printing, August, 1942	20,000 copies
Twentieth Edition, First Printing, September, 1942	75,000 copies
Twentieth Edition, Second Printing, November, 1942	75,000 copies
Twentieth Edition, Third Printing, April, 1943	60,000 copies

Ed. Note: The original Handbook copyright is framed and hanging in the AWA Museum.
This historical document was presented to AWA by ARRL co-founder Clarence Tuska.

The first book catalog section (in the back of the book) listed many familiar names such as Pyrex, Eveready and Weston. It was one of the first books available for the radio amateur to learn basic amateur operation. The early books kept the 6½" x 9½" size until 1977 but the number of pages increased to over 600.

In 1978, the size changed to 6½" x 9". This increased to 8¼" x 10¾" the following year (1979) and remained until 1984. I do not have a 1985 book so cannot give the new size.

Comments:

-- The 1943, 20th Edition, is the last book to list the number of editions and quantity printed. This information is valuable to the collector.

-- I have found that some years have more than one printing. As an example, 1927 had two printings: one in January and a second in April. After 1943, the books had only the number printed for a particular year and the edition number. 1948 was the last year that identifies the edition.

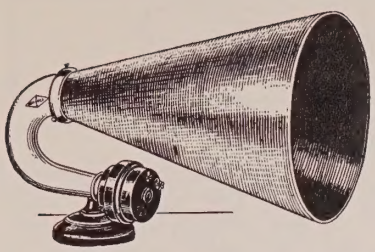
-- I have found three types of covers: paper, buckram (hard cover) and a paper cover that looks like buckram. The latter was used between 1959 and 1964.

-- There was a war-time edition titled: "*The Special Defense Addition*", printed in February, 1942. I have found three printings of this book which was used for training purposes during WW2. This book did not have a catalog advertising section.

-- 1949 was the last year to list the total number of handbooks printed from 1926 to date. The quantity was 1,928,250 copies. I have been unable to determine quantities after 1949.

I have sixty-three (63) editions in my collection. The total number of possible editions that I could identify is 89. Of interest, the book was also printed in Spanish. The information for this short article came from old handbooks, QSTs and the ARRL. If anyone has questions or information on the subject, I would like to hear from them.

Morris Rosenfeld, KA2JAJ (c/o AWA)



The LOUDSPEAKER

Editor: Floyd Paul, W6THU
1545 Raymond, Glendale, California 91201
All correspondence requires SASE for reply

Rola horn speaker

Ques: *Rola made horn speakers in the North West. Were there many other horn speaker manufacturers in the Seattle area?*

Ans: Yes, indeed, there were several radio horn speaker manufacturers in the Seattle area. Some seven companies made horn speakers in Seattle in the 1920's and perhaps an eighth company, called *Swoboda* which I'm still trying to confirm.

Jodra Mfg. Co., located at 65 Pier 1, made an aluminum neck and bell horn 22" high. They called it the "*Enchanter*". **Kilbourne and Clark** made a molded bakelite base and cellular rubber horn. **Rola,** of course, started in Seattle before moving to Oakland, California. See OTB, September 1980 for the "*History of the Rola Company*". **The Selector Company,** located at 2005 Sixth Avenue, Seattle, made an aluminum neck and bell which was advertised at 22½" high. It used a Baldwin driver unit. Art Corbus in Seattle has one.

The Specialty Company at 2129-31 Third Avenue, made a model called "*Helman*". Jim Barrows (AWA member) in Seattle has one. **Star-O-Tone Company,** 1936 West Lake Avenue, and **Star Radio Company,** 810 Pine Street, both made a horn called "*Star-O-Tone*". It is suspected one was the manufacturer and the other a sales outlet. Never-theless, both companies were listed in national magazines as the maker of Star-O-Tone. Star Radio Company advertised two different height models.

Universal High Power Telephone Company at Charleton and Eddy Streets, reportedly made two models, a goose neck and a straight neck style. It is thought that one machine shop in Seattle made the spun aluminum bells for those companies that utilized aluminum bells with a diameter of 14". A picture of the Rola horn speaker is shown. The Jodra "*Enchanter*" neck and bell appear similar if not identical to the Rola neck and bell.

Ques: *Radio amateurs used many different horn speakers in their ham shacks in the 1920's and 1930's. Were any horns made or advertised as "Ham" horn speakers?*

Ans: Only one manufacturer that I know of advertised a "Ham" horn speaker. That manufacturer was United Motors Service who in October 1931 in QST advertised a Delco "Ham" speaker. It listed for $12.00 and was priced $8.00 to Amateurs. It was a wall mount style and appears in the ad to use a Baldwin or Utah driver.

DID YOU KNOW – that what may have been the first audio transmission from a vacuum tube occurred in Fritz Lowenstein's laboratory on Nassau Street, N.Y.C. in 1912? A microphone was connected in series with an antenna of a low power transmitter (oscillator) and voices were heard several blocks away.

HISTORICAL ARTIFACTS

OLD TYME ADS are FREE to members interested in collecting and restoring early radio equipment for personal use.

RULES FOR ADS:

1. Only ONE ad per issue per member. Send SASE for acknowledgement.
2. Material must be over 25 years old and related to electronic communication.
3. Give full name, address and zip (and call).
4. AWA will not print repetitious ads or ones indicating regular sale or profit.
5. The Association is not responsible for ANY transaction.
6. AWA retains the right to reduce size of ad if over SIX (6) lines.
7. Only ONE ad per issue (no doubles).
8. Deadline for ads:

March issue--JAN. 10 Sept. issue- JULY 10
June issue --- APR. 10 Dec. issue-- OCT. 10

Ads received AFTER the above dates will be discarded. Mail ALL ads to: (Not Headqtrs.)

RICHARD RANSLEY
17 SHERIDAN ST., AUBURN, NY 13021

WANTED

--old meters used for radio, power, telegraph and scientific. Restoration of your old meter or replacement of old meters available, no list. Leonard Cartwright, 113 Sea Terrace Way, Aptos, CA 95003

--United Lan-Sing radios made by United Engine Co. of Lansing, Michigan. Jim Clark, 1006 Pendleton Dr., Lansing, MI 48917 (517) 323-9595

--radio tubes of the 50's, W.E. drivers 555,594, 596,597,713, speakers 728,753,754,755, amps 86, 91,92,105,124,142, consoles 25B, mixers 22, tubes 274,275,284,252,300, xformers, mikes. David Yo, PO Box 832 Monterey Park, CA 91754 Tel. (818) 576-2642

--need chassis, dial and speaker for large cathedral with 'Skyrover' on escutcheon (Wells-Gardner ?). Doug Heimstead, 1349 Hillcrest Dr., Fridley, MN 55432 (612) 571-1387

--Collins 32A,32B transmitter, National AGX receiver and WWII MKII transceiver. R.P. Buehlmann, N4IQA, 1314 Chaney Road, Raleigh, NC 27606

--Sony and other early transistorized & miniaturized radios & tv's, rocket & space vehicle shaped radios, unusual shaped tv's and catalogues and advertising for all of the above. Randy Liebermann, 305 East 40th St., N.Y., NY 10016

--tuning and volume knobs for AK 37, power resistor and AFT cover for AK 44 and filter condenser cans (duds ok) for RCA R-7. Jim Berg, 2648 W. Arkansas Ave., Denver, CO 80219

--Tuska 225 audio section parts or parts radio. Magnavox R3 Model B loudspeaker driver (smooth finish). Two band dial scale and set of knobs for Philco 37-61. Dale Wilson, 105 1st St. W., Jordan, MN 55352 Tel. (612) 492-6338

WANTED

--Granada or Pacific mantel radio using type 50 AF tube, International or Emerson Duo (2tuners) shortwave chassis in any condition. Also want to buy or borrow May '30 'Radio Industries' or any 'Western Music and Radio Trades Journal' magazines. Frank Heathcote, 1235 N. 3rd St., Logansport, IN 46947 Tel. (219) 722-3612

--Super Zenith VIII or VII in good condition. Bob Burick, 7656 Broadview Rd., Apt. 328, Parma, OH 44134 Tel (216) 886-5923

--stock ticker. Will trade keys, bugs or sounder. R. Cutter, 701 19th St., Glenwood Springs, CO 81601

--Jewell Pattern 88, bakelite case, 0-500 MaDC meter and tuning condenser from Zenith (Chirad) 1R, 3R or 4R receiver. Clarence Filley, 1109 S. 2nd St., Hamilton, MT 59840

--top plate and controls for Radiola III, balanced amp. and Crosley 50 front panel. Any parts except case for Aeriola Sr. Bob Barnes, 511 N. Chestnut, Monroe City, MO 63456 (314) 735-2945

--Zenith radio signs, displays, advertising and radios which are pre-1935. Walt Holliday, 641 Ponderosa, Bolingbrook, IL 60439 Tel. (312) 357-4955 8-5 Mon-Fri

--plug-in coils for Hallicrafters HT-6 xmtr. Electrolytic capacitor Aerovox EPM04 or similiar 8 MFD 600 VDC type. Craig Hinton, 2668 N. Riviera Dr., White Bear Lake, MN 55110 Tel. (612) 426-4751 evenings

--CQ Magazines Feb., Oct. and Nov. 1945. Also book "Riding the Airwaves" by Eric Palmer, Jr. Stephen Sierzega, WA9MEK, 3407 N. Normandy Ave., Chicago, IL 60634

--Philco chassis 51, 51A, 52 or 551 and working rainbow 01'A brass base with tip. Have for trade 1917 QST's and pre 1923 tubes. Michael Payne, 601 E. Coombs #10, Alvin, TX 77511 Tel. (713) 585-4292

--Rider manuals XXI and XXII in good condition. John Uscinowski, KE2O, RR#1, Box 379, Greenwich, NY 12834

--replacement meter for Heath VOM Model MM 1. Will accept whole unit. C. H. Daykin, W2AFE, 19 Oxford Place, Geneva, NY 14456

--Gilfillan pre-1928 receivers in any condition, particularily 9N3,9N6,20,30,60,70,80,90,55,65 etc. Even cabinet or chassis acceptable. Also amplifier AA18 Patricion internal horn carved mahogany speaker. I will arrange collection and shipping. Alan Brehaut, 22A Cain St., Timaru, New Zealand

--coils for "Ortho Big Six" TRF. Also info on Philco H-2010 tv, which has 2EP4 tube, germanium transistors, viewing mirror and is both AC and battery powered. Mark Twitchell, 163 Hunter Ave. Fanwood, NJ 07023

--19 inch rack-mounted speaker panel for early HRO or National AGS receiver. Cash or trade. Don Johnston, KA9KXQ, RR 1, Box 218-A, Windfall, IN 46076 Tel. (317) 945-7735

--Old or unusual telegraph bugs or keys, spark era keys and camelbacks welcome. Condition not important. Gil Schlehman, 335 Indianapolis, Downers Grove, IL 60515

WANTED

--Milwaukee made radios and accessories. Frank Kodousek, 8658 N. Servite Drive, Milwaukee, WI 53223 Tel. (414) 354-1274

--back cover for Western Electric broadcast mike (1925), horn speaker bottoms, crystal detector parts, bi-polar motors. Have meters and DeForest DL,DV tubes for trade. W. Harder, 911 Northrup W., Lansing, MI 48910

--contact with purchaser of MESCO general catalog, 1984 AWA auction. Have items and need information therefrom, will refund postage, etc. Charles Fisher, 161 Belknap, Framingham, MA 01701

--spark condenser, Dubilier .004, 12.5 kv. Also Marconigram, June 4, 1903 featuring "Marconi Station at Babylon" (or reproduced copy of same) George Flanagan, 16 Hughes Lane, N. Babylon, NY 11703 Tel (516) 422-0408

--Welch WR-501, Western Electric types 211-E, 211-D, 242C, 261A 276A and 331A. L.J. Schnedorf, 610 Monroe Ave., River Forest, IL 60305

--Air-Gap tube socket,universal type. Oct. '43 QST plus pre 1922 issues. Louis Vermond,VE3BDV, R.R.1, Little Britain,Ontario,Canada KOM 2ZO

--UX210's,UX865's,50's,201A's,71A's,UX211's, 112A,WE205D's needed by new member for 1925 ham station.Also spark xmtr parts and circuits and old dials and coils.Have old parts for trade. Frank Hutchins,1915 Benedictine St., Port St. Lucie, FL 33452 Tel. (305) 878-4948

--Crosley 59 chassis & matching 299 speaker, model 50 in very good condition,Crosley grandfather clock and Playtime Jr. model 141.Ronnie Kaczmar, 5747 Williamson,Dearborn, MI 48126

--WWI Signal Corp & Navy wireless,Wireless Speciality items,IP-500,501,501A,Radiola 26 battery box,Marconiphone,Grebe portable. Mel Rosenthal, 507 South Maryland Ave., Wilmington,DE 19804

--Radio News of May 1937, Wireless Age of Feb. 1922, Radio Retailing for 1924,25 and 1926. Paul Thompson, 2930 De La Vina, Santa Barbara, CA 93105

--spherical or tubular Audion, #5514 transmitting tube, top for Radiola 106 speaker, knobs for Crosley 77 and PUP. Also knobs for Radiola 44. Want early light bulbs. Will purchase or trade for tubes. Bruce Harbeck, 13408 Westwood Lane, Omaha, NE 68144

--microphones and other broadcasting equipment, catalogs, manuals and magazines. 16 inch transcriptions, 10 inch LP's, 10 inch 78's, small screen tv's,jukeboxes, early hi-fi equip.,Rider Vol. I and II. Robert Van Dyke, Squires Ave., East Quogue, NY 11942 Tel. (516) 728- 1327

--Grebe 'B & C' power supply, Mod. 671-B for battery Grebe Syncro Seven. Parts chassis or good chassis for Stromberg Carlson Model 641A. Edwin Allison, 5525 20th Ave., Sacramento, CA 95820

--British valves for my Monarch-Cromwell IV S.G. receiver. Need Mullard P.M. 12, P.M. 1HF, P.M. 22 or B.T.H. SG215, HL210. P230 pen. Also need literature and Cromwill loudspeaker for same. Mark Cowart, N4FBL, 1803 Mills Rd., Jacksonville, FL 32216

--Klitzen Model 125 detector & amplifier. Unit must be in very good original condition. See page 895 of Nov. 1922 Radio News. Phillip Drexler, 1175 E. Ripley Ave., St. Paul, MN 55109

--instruction book or schematic (copy ok) showing wiring diagram for LYSCO Model 400 modulator using 6L6's in P-P class B. Edward Braddock, W1XV, Box 452, Rt #1, Orleans, MA 02653

--1950 and earlier round tube televisions. Also 1930's tv's both round tube and scanning disk sets. Bernard Sampson, 908 Wood St., Houston, TX 77002 Tel. (713) 224- 9215 collect

--schematic and manual for Precision E-200C signal generator. Schematic, manual and early tube data info for Precision Model 10-12 tube tester. Chuck Childs, 201 W. 5th Ave., Johnstown, NY 12095

--manual or other info concerning Radio Manufacturers Engineering RME-84 comm. recvr. Also magazines or bulletins concerning medium and shortwave DXing/SWLing in 1920-1960 period and QSL cards from same. Morris Sorensen, 111 Town Line, Milton, Ontario L9T 2X1 Canada

--Zenith Stratosphere or cathedral,Detrola TV or console,1939 Philco Mystery Control box, AK84 chassis,good 16GP4 crt or mask from 1950 RCA with 17 in. crt, and Hammond audio transformers. 200 mile radius of Detroit on big items. Dennis Smith, Box 113, Trenton, MI 48183

--Bunnell sideswiper,marble base Clapp-Eastham key,Ivers bug,Cricket,Tillotson,Lyman,Greeley and Williams telegraph instruments. Neal McEwen, K5RW, 1128 Midway, Richardson, TX 75081

--pre-1927 factory crystal sets,early deForest or Federal receiver,pre-1946 TV,Radiola II or III David Smith, 119 B Hollywood Dr., Lynchburg, VA 24501

--Western Electric parts including mike xfmr #201C,fil. choke #69A,control relay #205A, osc-mod. plate choke #66A. R. Thorn, 61 Maple Pl., Huntington, NY 11743

--Stromberg Carlson model 27 audio transformer assembly p/n P-19541 for push-pull 45's. Also Eng. data books on S-C radios. Vernon Oehlke, Box 307, Sollar Hts. Road, Ghent, NY 12075

--any Amrad battery sets,parts,crystal sets, in any condition. Andrew Mooradian, 5 Priscilla Lane, Winchester, MA 01890

--diagrams,charts,instructions for Supreme 385, automatic Jewel tester pattern #199,Solar cap analyzer CB1-60,Triplett 1210A,Jackson test osc. model 640,Precision rf gen E200. M.S.Ruttan, Box 419,Odessa,Ontario,Canada KOH 2HO

--original AK double crystal detector unit.Will trade an AK Model 9 with tags plus a Radiola Grand for same. Jerald Hueber, 1002 Cedar St., Bonham, TX 75418 Tel. (214) 583-7261

--clock for General Electric Model S22X. Alan Cavender, G4FNM, 288 Hexham Rd., Throckley, Northcumberland, England NE159QX Tel.WYLAM 2874

--Scott 12 two dial parts escutcheon,knobs and cabinet.Also would like to purchase Scott Philharmonic. Denis Yanko,410 N. Summit, Oconomowoc, WI 53066, Tel. (414) 965-3641 collect after 5CST

--base and gooseneck portion for Music Master 13 3/4 in. horn. 4 1/2 in. at juncture with bell. Nathan Francis, 2020 Hanover Circle, Beaumont, TX 77706 Tel. (409) 898-0619

--xfmrs for deForest D-10,metal tops for Radiola V,junker Kennedy 110 and 525,parts for Newark Wireless Co. xtal set,knob and rheostat for Crosley 50.Have tubes, radios,etc. for trade. Jim Sargent, 4231 Karnes, Mesquite,TX 75150

WANTED

--Aeriola JR detector parts,Radiola IV parts, DA chassis. Merrill Bancroft, 169 S. Row Road, Townsend, MA 01469

--schematic and any literature or info for the American Bosch Model 28. Loretta Hausmann, 6256 Montague St., Philadelphia, PA 19135

--Hammarlund SWF 5 prong coil forms 1 1/2 in. in diam.,National type B dial and 2.5 v fil. xfmr. Fred Mikolajewski,KC9WW, 1325 S. 103 Street, West Allis,WI 53214

--National NTE or NTX-30 xmtr,any pre-WWII amateur gear. Parker Heinemann, W1YG, RFD Box 274, Lyme, CT 06371

--Arborphone Model 27 complete or cabinet,chassis or parts in any condition. Write giving description and price. P.A. Kinzie, 713 E. Beale St., Kingman, AZ 87401

--info on prewar Dumont 13 channel electrostatically deflected 20 in. tv,including whereabouts of one.Henry Schwartzman,133 W.Fourth St., Corning, NY 14830

--power transformer for RCA 630 TV. John French, 206 E. 7th St., #23, New York, NY 10009

If your ad is MISSING, it was received too late!

DISPOSE or TRADE

--1957 Eldico SSB-100F AM/CW/SSB 80 to 10 M transmitter w/manual and two spare finals.Very good condition. $200 or trade in part for KWM2. Stan Hojnacki,213 White Horse Pike, Oaklyn, NJ 08107

--Rider radio Vol.II $25, VII,XIII $15 each. 100 N.O.S. radio vibrators $100.,ATR vibrator books $3.,VT24/864 $5 and others.List wants. Jim Farago, P.O.Box 65701, St. Paul,MN 55165

--Radiola Superhet VIII (floor model)with spkr, loop in very good cond. $125. Riders I thru XIV,very good $125.Prefer pickup. J. Robert O'Donnell,234 W.Sheridan Ave., Annville, PA 17003 Tel (717) 867-2222

--transistorized bakelite & brass base WD-11's. Also 99's & 01A's for small sets to operate on one battery.Also have some regular type tubes. Bud Bedker, 66 Cloverside Ct., West Seneca, NY 14224

--Marconi Wireless stock certificate cancelled by RCA. $17.50 each,post paid. Looks nice when framed. Send for list 3-85 with 75¢ & SASE with two stamps. F. Krantz, 100 Osage Ave., Somerdale, NJ 08083

--working spark transmitter,old radios,tubes, parts. SASE for list. Want 12 VDC dpdt isolantite relays. Don Whittemore, W2CUZ, 36 Masterton Rd., Bronxville,NY 1708

--Riders manual Vol. I and an Aeriola SR. Arie Breed, 510 Lake Drive,Ottumwa,IA 52501

--Harvey Wells TBS50C $20, TBS 500 $50, RME 69 $175, FBXA $95, 1925 Traveler Portable w/tubes $75, SX25 $60. All plus UPS. William Ernst, 1619 Campbell Rd., Comins, MI 48619

--Kennedy 281/521, Wireless Age 2 bound vols. 1914-1916 plus more. SASE for list 85-1. Want deForest RJ-4 detector & deForest 1. George Potter, 238 Village Dr., Lewisville, TX 75067 Tel. (214) 436-3944

--old radio related literature.SASE for list. Want AK cathedral cabinets for model 84 and 90. Herman Fothe, 10 Jackson St.,Sloatsburg,NY 10974

--tubes,parts,schematics,radios and custom designed pwr. supplies for battery sets. Send #10 SASE for list. Stan Lopes, 1201-74 Monument Blvd, Concord, CA 94520

--trade 1931 Philco sales brochure for Zenith brochure 1934 thru 1938. Don Knotts, 3158 N.E. Azalea, Hillsboro, OR 97124

--Crosley 5-50 w/meter $50.,Apex w/loop $30., Gecophone crystal set $250,FE-18 $80.Have Crosley XL for trade.Want ACE Precision, early Crosley and early '20s Radio News. Craig Ball, 10101 Oak Hallow Cir.,Austin,TX 78758

--American Radio Journal,Radio Guide,Radio Retailer & Jobber,Radio Dealer, 1922-25. Will swap spherical Audion,1-tube Eisemann,Pink-a-Tone xtal & British sets, Radio News, etc. Alan Douglas, Box 225, Pocasset, MA 02559

--AK-5 (all original,ser. #129),AK12, GE Longfellow Grandfather clock radio,50 other radios. SASE for list. D. Voydanoff, 1141 Yorkshire, Grosse Pointe Pk.,MI 48230

--Riders Vol. VI,XIV,XV,XVI,XVII $10 each or $40 for all plus shipping. J. Lisaius, 116 Orton, Caldwell, NJ 07006 Tel. (201) 226-7943

--cloth covered AC line cord,brown or gold color. 26¢/ft or $22/100 ft. Shipping $2/order. SASE for free samples and qty discount. Bob Goodman, 7943 Ponce, Canoga Park,CA 91304

--Garod Neutrodyne chassis,power unit and RCA 100 speaker,1937 instructograph,Philco 96 chassis w/speaker,AK 42 w/'E' spkr. D. Gerner, 338 Oak Rd.,Oil City,PA 16301 Tel.(814)676-3083

--RCA 630 TV chassis (see Dec. '84 OTB article) $30. Console cabinet and 20 in. pix tube also available. Al Smith,Stonehedge,Lincoln,MA 01773

IMPORTANT! Ads MUST be sent to Dick Ransley. Ads sent to Holcomb will NOT be processed!

Spring Swap Meet sponsored by the Northwest Vintage Radio Society to be held Saturday, April 13th, 1985 at Buena Vista Club House at 16th & Jackson St., Oregon City, Oregon (South of Portland) AWA members welcome!

SEEKING INFORMATION?

A new reference book for the collector:

OFFICIAL SERVICE MANUAL and complete Directory of all Commercial Wiring Diagrams. Published by Gernsback in 1930. AWA hasn't seen this large format 356 page book as yet, but we understand it will be valuable reference to the broadcast set collector. It will be reprinted by Vestal Press sometime in either March or April and sell for $19.95 More information in the June OTB.

Manuals for Amateur and Commercial receivers:

HI MANUALS Send $1. for large catalog list. Box 802, Council Bluffs, Iowa 51502

HALLICRAFTER manuals, etc. Write to: Ardco Electronics, Box 95, Berwyn, Ill. 60402

RECENT RADIO and ENTERTAINER OBITUARIES

by Dick Waddell

JAMES PETRILLO, 92 yrs.
Pres. Amer. Fed. of Musicians

KENNETH CARPENTER, 84 yrs.
Announcer for Bing Crosby and Charlie McCarthy programs

JESSE MARSTEN, 87 yrs.
Ret. VP IRC, former Marconi, RCA and Freed-Eisemann employee.

ELMER ENGSTROM, 83 yrs.
Ret. Pres. RCA, leader in color TV development, Dir. Res. Lab.

WM. BURDEN, 78 yrs.
Pres. Museum Mod. Art, N.Y.C.

FREDERICK BRISSON, 71 yrs.
Broadway producer, son Carl Brisson

MARTIN RYLE, 66 yrs.
Noted British radio astronomer

WALLACE CRAWFORD, 84 yrs.
Manager of RCA Harrison Tube plant.

E. M. LOEW, 86 yrs.
Former Pres. Loew Theater chain

SILENT KEYS

Vincent Lapp, W2FN
Bob Shaw (Temple, N. H.
George Driscoll, WA2DSH
"Bud" Waite, W2ZK

G. WALLACE CRAWFORD, RCA AUTHORITY ON ELECTRON TUBES, DIES AT 84

Mr. Crawford retired in 1965 after 47 years of service with RCA and General Electric Company. He was Plant Manager of RCA's tube manufacturing plant in Harrison, NJ from 1953 to 1959.

During the period when Mr. Crawford was Plant Manager, the sprawling Harrison plant complex employed nearly 7,000 persons and annually produced over 87 million RCA tubes, primarily for home radios and television sets. Mr. Crawford also served as an RCA consultant on the construction of tube plants in France, Italy, India, Poland, Sweden, Spain, and Germany.

Mr. Crawford began his business career in 1918 as an engineering aide with Edison Lamp Works of the General Electric Company in Harrison. In 1930, Mr. Crawford became an RCA employee when the company acquired the Harrison plant from General Electric. Four years later he went to Italy and helped to establish a tube manufacturing plant in Pavia, near Milan.

He subsequently returned to the U.S. and, after holding a series of posts in various tube activities, was promoted in 1945 to Manager of Manufacturing for all tube types made in Harrison. Four years later, Mr. Crawford aided in the construction of tube plant in Lyons, France.

Following Mr. Crawford's six years as Harrison Plant Manager from 1953 to 1959, he was instrumental in starting another tube facility in Bangalore, India. From 1959 until his retirement in 1965, he was involved in various planning functions for receiving tube operations.

(Newspaper clipping APRIL, 1964)

Charles R. Leutz, Marconi Radio Associate

Charles R. Leutz, 65, who worked with Marconi on early transoceanic radios, died Saturday at Red Bank, N.J., after a stroke.

Mr. Leutz, a native of Boston, joined Marconi's Wireless Telegraph Co. of America in 1917 and worked for the company on Long Island for two years. He then set up his own business, C. R. Leutz, Inc., which made radio broadcasting and receiving equipment.

In 1940 he went to work for Gibbs & Cox, Inc., where he specialized in designing and checking production systems for Navy combat ships. From 1946 to 1948 he was with the Federal Telephone & Radio Corp.

I N - H O U S E

A.W.A. HISTORICAL FILM SHOWS

The following historical film shows are available for AWA programs. They ARE NOT AVAILABLE for non-AWA activities.

AWA SLIDE SHOWS

All shows are in Carousel trays with cassette or reel-to-reel commentary.

S-1 PORTRAIT OF A PIONEER

2-trays 114 slides, 42 min.

Commentary by radio-aviation pioneer Elmo Pickerill: early DeForest, United Wireless operation (1905-12), ship experience (1913-1932) and aviation from 1910 to 1950.

S-2 POLAR ADVENTURE

1-tray 140 slides, 43 min.

30 years of adventure in the antarctic told by the radio operator Bud Waite, W2ZK. Byrd's rescue at the South Pole, spectacular kodachrome slides of the polar regions.

S-3 70 YEARS OF RADIO TUBES

1-tray 80 slides, 25 min.

An opportunity to see, identify and learn about the development of the vacuum tube.

S-4 THE EARLY YEARS

1-tray 80 slides, 35 min.

Clarence Tuska narrates this historical show and tells about early amateur radio (1910), founding of the ARRL (QST) in 1915 and equipment used during WWI.

S-5 THE BRITISH COLLECTOR

1-tray 80 slides, 30 min.

A visit to the Herpenden flea market, the British Science Museum and Gerald Wells' establishment. A survey of early British broadcast receivers.

S-6 THOSE WONDERFUL MAGAZINE COVERS

1-tray 80 slides, 25 min.

A non-technical program showing and telling about colorful radio magazine covers of yesteryear (accompanied by pleasant music.)

S-7 THE 1921 TRANS-ATLANTIC TESTS AND STATION 1BCG

1-tray 80 slides, 25 min.

The story of the tests that made radio history when the amateur spanned the Atlantic on shortwave. Original pictures of equipment used.

S-8 A VISIT TO THE AWA MUSEUM

1-tray 43 slides, 33 min.

Illustrated commentary covering the historical artifacts in the AWA Museum.

S-9 PIONEERS OF WIRELESS

2-trays 114 slides, 45 min.

Slide version of the movie "End of an Era" with radio pioneers such as Hugo Gernsback speaking, etc. (NA)

S-10 120 YEARS OF BRASSPOUNDING

2-trays 156 slides, 50 min.

Emphasis on early commercial and amateur operation climaxing with unusual keys and tribulations of a U.W.T. wireless operator. (NA)

S-11 THE MARCONI SHOW

2-trays 150 slides, 50 min.

A documentary on Marconi's life and activities up to 1923. (NA)

S-12 THE WORLD ABOVE 50 MC.

2-trays 120 slides, 45 min.

The early history of VHF and amateur radio. (This show is being revised.) (NA)

DUAL PROJECTION SLIDE SHOWS

Requires 2 Carousel projectors, special dissolve unit and stereo tape playback.

SM-1 THE GOLDEN 20'S

2-trays 160 slides, 43 min.

Radio broadcasting in the 1920's. (This show is being revised.)

SM-2 THE THIRTIES

2-trays 270 slides, 43 minutes

A new AWA show covering radio broadcasting and entertainment in the depression years 1929-1939. (NA)

SM-3 20 YEARS: 1919-1939

2-trays 280 slides, 45 min.

A popular favorite telling how broadcasting influenced entertainment between 1919 and 1939. (NA)

SM-4 PEN AND CAMERA

2-trays 206 slides, 42 min.

The "Lively Arts" 1905-1985 (NA)

SM-5 AN AMERICAN INVENTOR

2-trays 204 slides, 52 min.

The life and inventions of Maj. E. H. Armstrong. This is considered the best of A.W.A. documentaries. (NA)

16 MM. "MOVIES" (SILENT)

MS-1 END OF AN ERA

25 minutes, Kodachrome

Rare movie made by AWA in 1954-56 of our last high power longwave stations: Tuckerton, New Brunswick, Sayville, Marion, Rocky Point/Riverhead. Scenes of Alexanderson alternators in operation, huge VLF antennas circa 1915, etc. Written script. (NA)

MS-2 HISTORICAL EVENTS

15 minutes, Black & White

Excerpts from early news reels: Titanic and Carpathia, Marconi (1912), destruction of Fessenden's Brant Rock tower. Written script. (NA)

SM-3 FREED RADIO

20 minutes, B&W, Captions

Filmed in the the late 1920's showing manufacturing of early AC receivers: machining operations and assembly lines. (Captions)

16 MM "MOVIES" (SOUND)

MA-1 LAYING A TRANSATLANTIC CABLE

30 minutes, Black & White

Unusual movie showing laying a submarine cable across the Atlantic. (Made in the late 30's.)

MS-2 TELEGRAM FOR AMERICA

30 minutes, Black & White

Western Union operation and equipment in the 1930's. Historical.

MA-3 ELECTRONS AT WORK

22 minutes, Black & White

RCA made this movie in 1938 or 39 to promote the all-metal tube. An opportunity to travel thru the old Harrison plant and see tube manufacturing.

MA-4 TOUR OF THE AWA MUSEUM

Available in either BETA or VHS Video tape. 25 min. color

An informal tour with the curator thru the AWA Museum explaining the more interesting artifacts. Many pieces of equipment are demonstrated.

Note: Shows marked (NA) are presented by Program Committee and not available for loan. AWA slide shows are assembled by W2ICE.

Sunday's Unusual Events

12:30—Viscount d'Abernon, "The Economic Crisis, Cause and Cure." WABC, 349 meters.

1:00—Oratorio, "The Apostles," Part 1. WEAF, 454 meters.

1:45—Deems Taylor, "Opera in America Today." WEAF, 454 meters; WJZ, 395 meters.

8:00—New York Philharmonic Orchestra; Arturo Toscanini, conductor. WABC, 349 meters.

6:45—Play, "The Upper Room," with Margaret Anglin. WOR, 422 meters.

7:30—Beniamino Gigli, tenor. WEAF, 454 meters.

9:15—John Charles Thomas, barytone; Michael Rosenker, violinist. WEAF, 454 meters.

9:30—Manhattan Symphony Orchestra; Henry Hadley, conductor. WOR, 422 meters.

—Detroit Symphony Orchestra; Victor Kolar, conductor. WABC, 349 meters.

10:15—"Trial of Benedict Arnold," Part II.; counsel, Clarence Darrow and James M. Beck. WEAF, 454 meters.

How many can remember this 1931 Sunday broadcast ? The names Deems Taylor, Arturo Toscanini, John Charles Thomas, Clarence Darrow ??

Members gather at the AWA Musuem. l. to r.: Art Goodnow (retired Director of Engineering, Westinghouse Broadcasting Company), Alan Glover (retired Vice-president, Solid-state Division RCA), and Dick Vermeulen (South African Broadcasting Company, Johannesburg, South Africa).

MARCONI ON MODERN-DAY COMPUTER

One of the more unusual contest entries was a computerized history of Marconi. The exhibit consisted of a computer flanked by a display of pictures showing four milestones in wireless history in which Marconi participated: The 1898 American Cup Race, the reception of the letter "*S*" at Signal Hill, the site of the first trans-atlantic two-way communication at Glace Bay and the first two-way communication with United States at South Wellfleet.

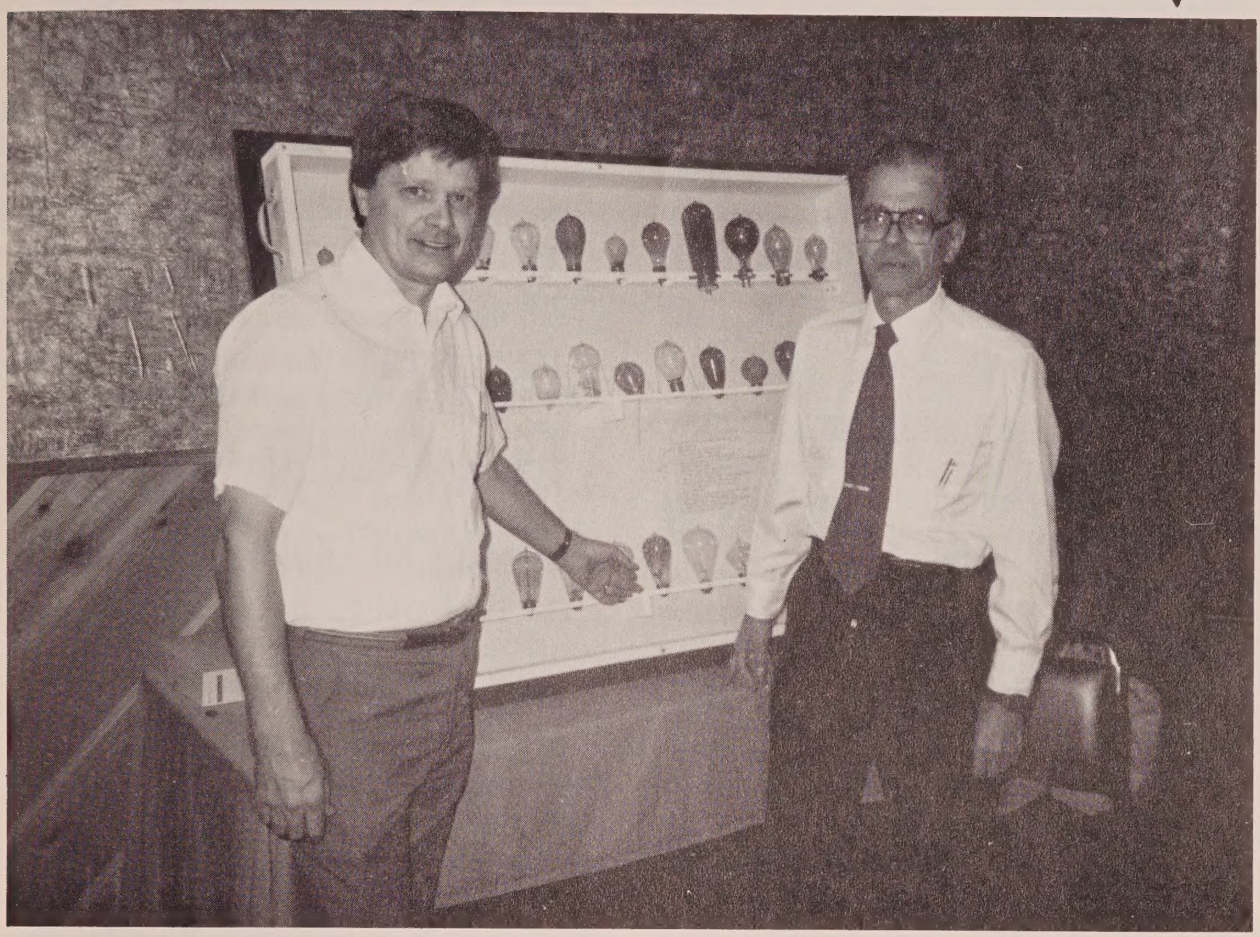
The computer was programmed to answer questions on these subjects. Dr. Max de Henseler (HB9RS) was responsible for this unusual and original entry. Max is a native Swiss who is stationed in New York City as Chief Cartographer for the United Nations.

He is founder and President of the United Nations station 4U1UN. First licensed in 1947, he has held such exotic calls as ET3RS (Africa), XW8HB (Asia), 5W1BK (Oceania), 9Y4RS (S.A.), HB9RS (Europe) and of course, HB9RS/2 in N.A.

Max collects Hallicrafter receivers!

SCENES AT THE RECENT CONFERENCE

Report by Horace Witherspoon



Bruce Roloson and Jack Wenrich gave an excellent talk on light bulb development.

Marshall Etter (W2ER), a fill-in for a last minute cancellation, came through with an authoritative talk on early wireless stations. Using old 3 x 4" glass slides in an ancient projector, he showed the group rare pictures of early Marconi stations and equipment. Marshall is a most knowledgeable historian. He is retired general manager of the RCA Rocky Point Communication Center.

Book Review

"TAYLORVISION" -- This exquisitely designed and illustrated monograph takes a look at one inventor's endeavors to combine technology of different decades to create a hybrid television system utilizing scanning discs and all solid state circuitry. Demonstration television images from the 1920's can be seen with the apparatus described in the sixty-four page volume. Published in 1984 and available from the author at $4.98 postpaid. Make check out and mail to: E. E. Taylor, 245 N. Oakland Ave., Indianapolis, Ind. 46201

A.W.A. ON THE AIR

New 75 meter SSB Net (3868 kc.)
SUNDAY 5 PM EST/ESDT

Florida 40 meter SSB Net (7225 kc.)
WEDNESDAY 2 PM

OLD GEAR CONTEST CATEGORIES

NATIONAL HISTORICAL RADIO CONFERENCE

CLASS I CRYSTAL RECEIVERS

1st--Quaker Oats display-John Williams
1st--Mark III- Mike Feher
2nd-Talking Book-Chuck Stinger
3rd-Duncan Console-Harvey Adams

CLASS II EARLY REGENERATORS

1st-ZNith Tuner-Amp-Joe Willis
2nd-Penn Wireless-Jerry Finamore
3rd-Amrad Med.Wave-Dick Brewster

CLASS III LATER REGENERATORS

1st-Cosmos 3-Valve-Ralph Muchow
2nd-Canadian Radiola III-Floyd Engels
3rd-Radiola Grand- Ernie Hite
Hon. Men. -Grebe CR-9-Mike Katzdorn

CLASS IV TUNABLE TRF'S

1st-Leutz Universal- Larry Wright
2nd-Bosch Amborola-Roland Emerick
3rd-Eagle Type A-Wilson Norwood

CLASS V UN-ADJUSTABLE TRF'S

1st-Vocaphone-Larry Wright
2nd-Zenith portable-Douglas Furney

CLASS VI SUPERHETS

1st- Scott projector TV-Rick Taylor
2nd-Bulova clock radio-Clay Seidel

CLASS VII SPARK TRANSMITTERS

1st-1912 Replica- Lincoln Cundall

CLASS VIII TUBE TRANSMITTERS

1st-Westinghouse FT-Joe Willis
2nd-1935 Tri-tet - Stan Hojnacki
3rd-80 meter Hartley-Bob Dennison

CLASS IX MARCONI EQUIPMENT

1st-Mod. 106 w/bat/box and brand iron
Jim and Felicia Kreuzer
1st-Magnetic detector-Ralph Muchow
2nd-Canadian Marconiphone III
Ted Cotton
3rd-Brown Relay- Jim Wades

CLASS X MARCONI DOCUMENTS

1st-Historical display-Bob Schaumleffel
2nd-Trail in North America
Max de Henseler
3rd-Engineering drawings-John Etter

CLASS XI SINGLE TUBE DETECTORS

1st-Martian Beauty-John M. Williams
2nd- Audiotone -Charles Day

CLASS XII LATER MARCONI SETS

1st-Marconiphone 42-Frank Heathcote
2nd-Marconiphone 262-David Thomas

BEST of SHOW: Marconi 106 with equipment- Jim and Felicia Kreuzer

ELLE AWARD: Acme Sear Crystal set-
Mike Katzdorn

TRANSMITTER (Matlack) AWARD:
"Symphony in Copper"- A. C. Stoddard

JUDGES: L. Cundall, J. Vanicek, C. Day, J. Kreuzer, J. Drake and R. Williams

Comments on Equipment Contest:

The 1984 Old Equipment Contest again brought out a spectacular display of classic and antique radios. Three categories were keyed to the Conference theme, Marconi, and the entries drew praise from all viewers. In particular, Mrs. Gioia Braga, Marconi's daughter was impressed with the honor shown to her father by our contestants.

Because the theme classes bring out so many historical artifacts and displays, the 1985 Conference and its contest will honor Hugo Gernsbach and the Electro-Importing Company. Present plans call for two equipment categories and one for the display of the publications and graphics that made Gernsbach famous. Tentatively, one equipment category will exhibit receiving devices and receivers, and the other will show transmitting hardware and complete transmitters. You will be reading more about the 1985 contest in the next Bulletin. Meanwhile, start planning your entry.

--Ralph Williams, N3VT, Contest Chairman

THE AUCTION

There will be a special auction at the 1985 Conference devoted entirely to amateur equipment. Time: Thursday at 8 PM. Equipment check-in at 6:30.

This event will not conflict with the regular Friday auction since it will be restricted to amateur receivers and transmitters of the 1930-1955 period. All transactions will take place at time of sale between buyer and seller. John Nagle, K4KJ, has volunteered to act as auctioneer.

1985 OLD EQUIPMENT CONTEST

Each year the Old Equipment Contest offers an opportunity to exhibit the unique historic memorabilia that is honored by the Conference theme. This year we are celebrating Gernsback's many achievements in wireless and communication. To assure a broad opportunity for collectors to compete with their best Gernsback artifacts, there are three special categories: Early Wireless; Documentation; and Later Equipment. The other categories for this year are the standard ones, two for transmitters and five for receivers.

1. Gernsback (Electro-Importing) Wireless
2. Gernsback Documentation
3. Later Equipment incorporating EI or Gernsback equipment and circuits
4. Crystal and Passive-Detector Receivers
5. One- and Two-Tube Receivers
6. Three-Tube Receivers
7. Four- and Five-Tube Receivers
8. Six-and-More Tube Sets
9. Spark Transmitters
10. Tube Transmitters

The early Gernsback Wireless category will include Electro-Importing equipment made before the era of broadcasting. The Gernsback documentation category is the place for historic papers, pictures, and other memorabilia that wouldn't normally be considered operating equipment. The Later Equipment category has been included to bring out Gernsback's circuits and the hardware used for building broadcast or later amateur equipment. There are no limitations on the kind of material that can compete in the two Gernsback equipment classes. Receivers, detectors, transmitters, auxiliary and test equipment are all sought. Please note that the equipment in the Gernsback categories does not have to be made exclusively of E.I. parts. The goal here is to show Gernsback published circuits and their implementation. If you have a nice piece of equipment built from Gernsback publication data, bring it and the technical literature from which it was constructed.

This year the Crystal sets will include all kinds of Passive Detectors. However, each entry must be a receiver that includes, as a minimum, connections for an antenna input and sound reproducer output. Sets that include these devises within the entry are especially welcome.

The four categories for receivers having tubes have been chosen to simplify the category definition and to solve a problem that has sometimes limited our members from entering. We have, in the past, used a circuit form to identify a category, i.e., regenerators or superheterodynes, and consequently barred a set which didn't exactly fit in. We might bring out more prize receivers if we simply categorized by the number of tubes in a receiver. This year we thought that the idea would be worth trying so here are the descriptions of the new categories:

One-Tube and Two-Tube Receivers. There will be no limitation in circuitry beyond having a means of detection and including either one or two tubes. An example of a receiver in this class that hasn't been entered in a long time is a two-tube super-regenerator.

Three-Tube Receivers. There will not be any circuit limitation for these entries. This category will attract many regenerators but we hope to see some plain detector, three-tube sets such as the AK 3945. An entry will be enhanced if the circuit is identified and shown, but no entry will be reduced in value if its documentation is not presented.

Four- and Five-Tube Sets. Again, there are not specific requirements for circuit conformance. Whether the receivers entered in this class have tuned or untuned radio amplifiers, or no amplifiers at all, will not be a limitation. The circuit of each entry in this category is of interest so documentation will add to the entrant's display. If this category attracts too many entries, we will divide it into two parts during the contest set-up.

Sets with Six or More Tubes. Superhets are included but now any others that use six or more tubes will be entered in this category. Many TRF sets that used resistance-coupled audio amplifiers had six tubes. These are included in this category.

Transmitters will be divided into Spark for early history, and Tube to give everyone a chance to see the transmission equipment that changed radio from a simple hobby to a major factor in a new way of life, especially reflecting the contributions made by amateurs.

The judgment factors that have been used in the past will continue unchanged. In the order of their importance these are: Rarity; Uniqueness; Technical Significance; Historical Importance; Documentation; and Condition.

Ralph Williams, N3VT, Contest Chairman

Museum News

CTS-TURNER MUSEUM

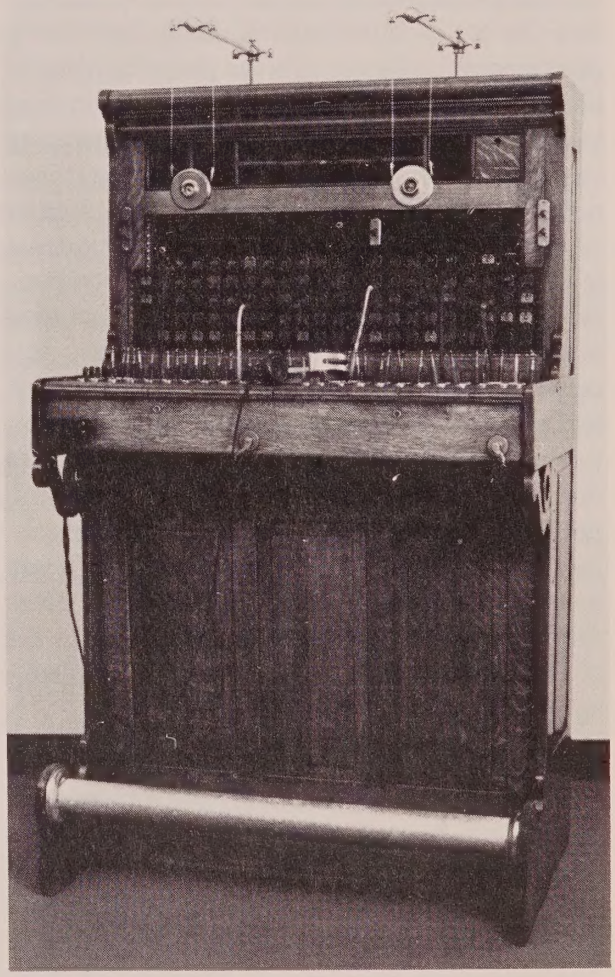
Member, American Association of Museums

The CTS-Turner Museum contains many interesting displays of early CTS products and their applications in the radio and electronic industry. CTS Corporation began as Chicago Telephone Supply Company on Quincy Street in Chicago. Expansion brought the Company to Elkhart, Indiana in 1902.

The museum is located on the second floor of the CTS Corporate Building at 905 N. West Boulevard in Elkhart. Entering to the left is a display of magneto hand-crank telephones made by the Company from 1899 to 1940, followed by a magneto switchboard, typical of the several types made before WWI. Below the line of telephones are many interesting pictures of early factory operations.

To the right is a display of radios from the 1920's and the 1930's representing applications of CTS products. Radio parts were first made for the Herbert H. Frost Sales Agency in Chicago. Headphones, carbon hand-held and table microphones, rheostats, jacks, plugs, switches and tube sockets were sold under the Frost name; and are displayed in the center of the room. Herbert H. Frost was the first president of the Radio Manufacturer's Association.

By the late 1920's, CTS became a supplier direct to all major radio manufacturers, such



Early switchboard

ANOTHER CARTOON FROM THE BERLIN SCIENCE MUSEUM

CTS-TURNER

[Continued from previous page.]

as Crosley, Philco, Emerson, G. E. and Zenith. By the late 1930's, CTS became the number one supplier of carbon potentiometers and associated switches. With the introduction of television, the company expanded many times, reaching production of over two million parts per week for many years.

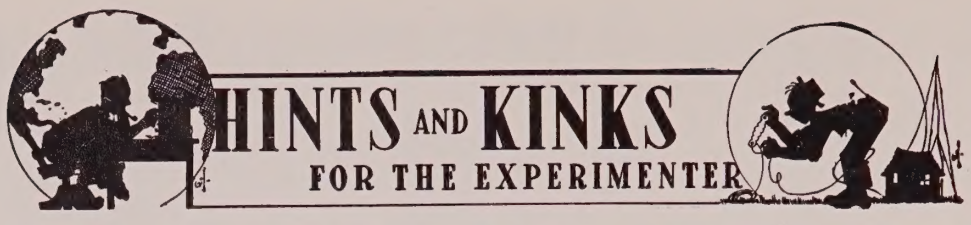
Turning to the east side, there is a library of CTS cataloges, books, pictures and records. Next is a display of loudspeakers and test equipment. In 1961 CTS purchased the Magnavox speaker plant at Paducah, Kentucky, and have since moved the speaker manufacturing to Brownsville, Texas.

The center of the room contains many displays of early potentiometers, crystal products and other OEM products. In 1964 CTS purchased the J. K. Knights Company of Sandwich, Illinois, and continues to furnish precision quartz crystal products to the industry and to the military. The company is now known as Knights Division of CTS Corporation.

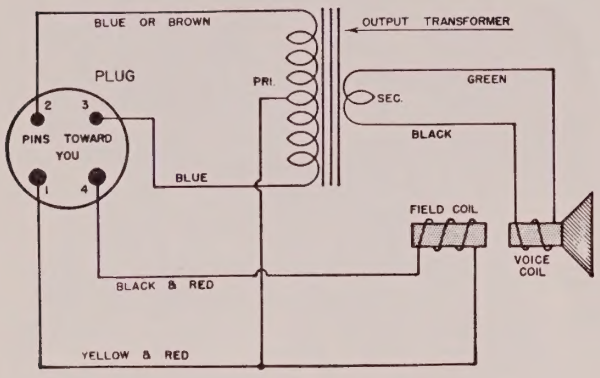
World War II equipment is shown in the south end of the room. CTS received four Army-Navy "E" awards for supplying many types of components, field radio-telephone units and radar sweep potentiometers to the Armed Forces.

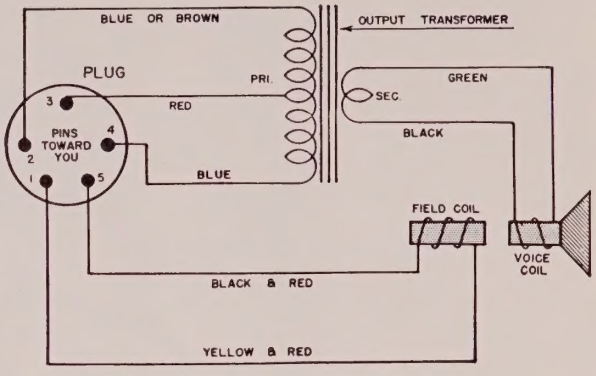
Since CTS products are sold direct to Original Equipment Manufacturers, the public is less aware of its well established and excellent reputation throughout the electronics industry for good quality, price and delivery. The Museum is open during regular weekday working hours by appointment. Please call CTS at 219-293-7511 or call Ross Smith at 219-295-7770 one or more days in advance.

by: Ross Smith, CTS Corporation



Speaker Leads and Plug Connections





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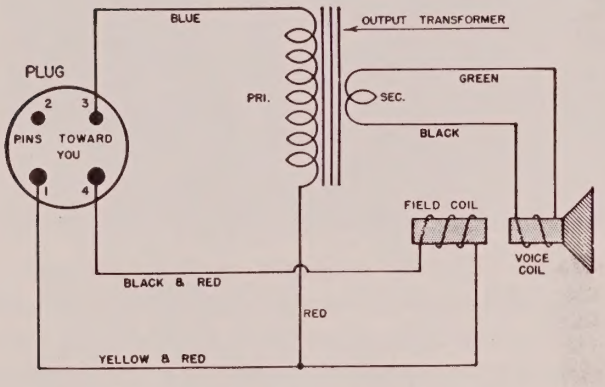
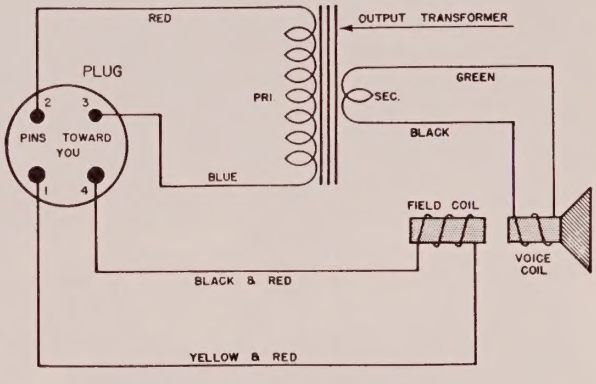
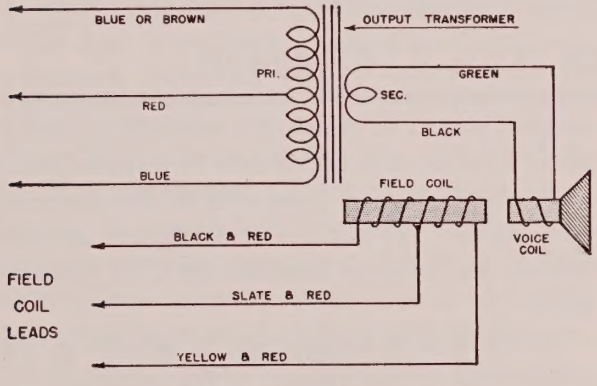
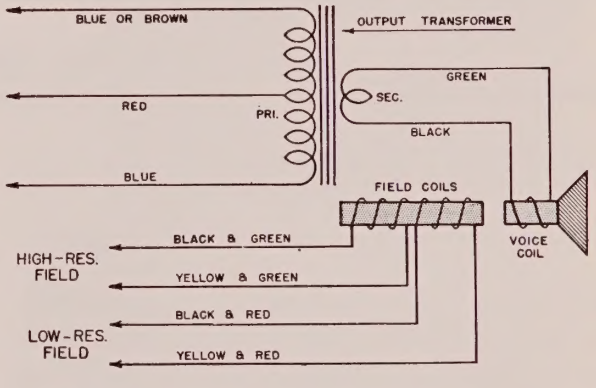
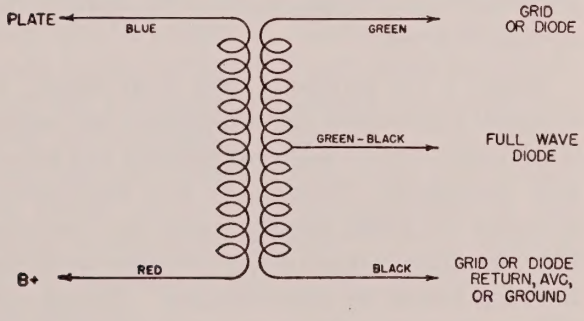




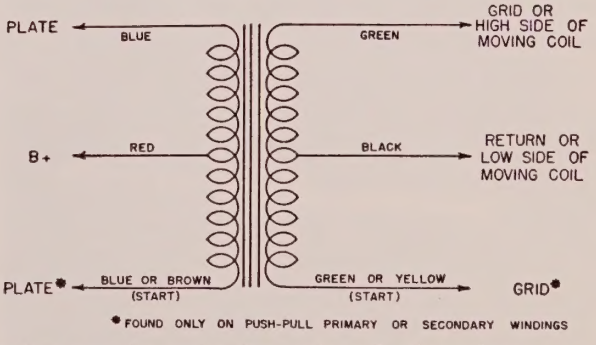




I-F Transformers



Audio & Output Transformers



Members may find the above electro-dynamic speaker circuits and color codes of value when restoring early A. C. receivers. *by D. Boucicault, Barre Pass, Texas*

UNUSUAL EQUIPMENT IN THE A.W.A. MUSEUM

AWA 1985 TUBE EXHIBIT

Glen and Babs Fuller have setup an unusual exhibit of 109 historical radio tubes at the AWA Museum. Unlike the large W2GK 60-panel display (Manhattan College) which shows tube development by manufacturer and type, the single AWA panel is a mix of American and European tubes with emphasis on types described in Gerald Tyne's book *The SAGA of the Vacuum Tube.*

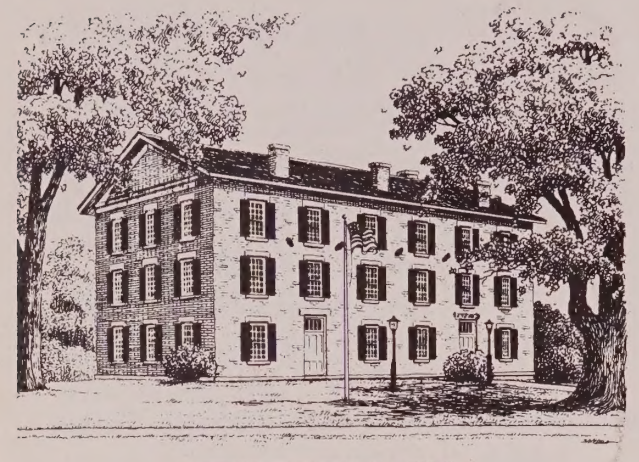
Each tube is assigned a number and identified by a listing at the display case. Here are a few of the tubes that visitors can examine:

Panel No.	Tube Description and SAGA reference No.
1.	Extremely rare 1905 "gallow' type Fleming valve. SAGA 3.6
2.	Fleming valve w/bayonet base and socket. SAGA 3.9
5.	Fleming "Erect" valve. (AWA has 6 different Fleming valves made between 1905 and 1910.)
4.	"Holland Tube" SAGA 13.10 (One of the first tubes made in Holland.)
6.	Round Type "N" SAGA 11.8 (Straight base type.)
8.	Round Type "N" SAGA 11.8 (One of first British triodes.)
7.	Round Type "T" SAGA 11.0 (First British transmitting tube.)
10.	Round Type "C" SAGA 11.25
9.	Marconi Type R-4 SAGA 11.21
12.	Marconi Type U-3 rectifier
11.	Phillips D-1 SAGA 20.1
13.	Marconi Type "R" SAGA 11.20
14.	Marconi DE-3 SAGA p. 380
17.	LRS Relay SAGA 12.4 (First German tube.)
19.	Siemens Type "BF" SAGA 12.17
20.	Siemens-Schottsky SS-1 SAGA 12.31 (One of the first 4-element tubes.)
21.	Marconi LS-5 SAGA p. 367
22.	Fotos Type TM SAGA 10.5
23.	SIF transmitting tube SAGA 19.1
25.	"LeRadio" SAGA 19.6
26.	Grammont "Blue" SAGA 19.6
27.	Telefunken EV-173 SAGA 12.28
28.	Telefunken EV-171 SAGA 12.27
105.	French "Junot" SAGA 19.20
43.	Loewe Type 3NF SAGA 21.26
45.	"AP" rectifier SAGA 9.16
46.	Extremely rare Type "S" used at NAA in 1915 Trans-atlantic Tests. SAGA 6.29
47.	Tigerman SAGA 9.27
51., 52., 54., 55.	Variants of Weagant valve. SAGA 9.23
53.	Extremely rare UV-212 diode.
56.	Extremely rare transmitting triode made by Langmuir in 1913. SAGA 8.1
57.	DeForest CF-185 SAGA 7.16
58.	Solenoid tube SAGA 9.20
60.	French 5-prong "Radio Bigrill" SAGA 19.6
62.	Rare Donle with external element. SAGA 17.6
69.	Rare WE Type 221-A "NN" SAGA p. 280
84.	Emerson multi-valve SAGA 17.20
108.	Rare Kenotron 1919 rectifier. SAGA 8.26

Not listed are dozens of early multi-element tubes (Loewes, etc.), miniature watercooled tubes of the 20's, and other unusual types. The AWA tube collection was started 50 years ago (1935) by W2ICE. The collection now consists of approximately 10,000 receiving and transmitting tubes, CRT's, TV camera and pictures tubes, photocells, IR and special application types plus light bulbs.

What may be the world's largest identified exhibit of tubes is located in the Engineering Library, Manhattan College, New York City. For information and visiting hours, write: Bro. Patrick Dowd, 425 Paramus Road, Paramus, New Jersey 07652.

THE MUSEUM



NEW EQUIPMENT
in A.W.A. Museum
(sets, parts, magazines, books, etc.)

K2JFV-VE6ACZ, N2EH (RG&E), W2PZH, K2EEK, W2HYN, WA2FKU, W3KUH, W3FNU, W4FI, K4GDB, W4WZU, W6SAI, W8DSR, G6JP, R. Ryan, J. Davis, Dirk Vermeulen, W. Stanton, A. Douglas.

MUSEUMS TO VISIT:

Barnstable, England: *Bygones and Broadcasting Museum* at 12 Silver Street. BVWS members Bob and Pauline Brain have a large exhibit of Victorian musical entertainment ranging from music boxes, organettes, gramaphones to crystal sets and early television receivers. The Museum is open from Monday till Saturday.

Nijerk, Holland: A newly open attraction called *Museum of Electricity*. (Nijerk is not far from Amsterdam.) The director is Marcel Ritmeester. Exhibits range from the work of Volta to television.

Isle of Wight (England): Visitors to the Island will find the *National Wireless and Communications Museum* at Arreton a fascinating place. It has been in operation for several years under the guidance of Douglas Byrne. Hours: 10 a.m. til 6 p.m. weekdays and 2 till 6 p.m. Sundays. **(Credit BVWS Bulletin)**

Reminder: DO NOT send dues or Want Ads to Holcomb, N. Y. !

A.W.A. HISTORICAL MUSEUM

East Bloomfield, N. Y.
Free Admission

Museum Hours:

May 1st through October 31st
SUNDAY 2 TO 5 PM

June 1st through August 31st
SATURDAY 2 TO 4 PM
WEDNESDAY 7 TO 9 PM

Open to groups by appointment
Tele. (716) 657-7489

Museum Tele. (716) 657-6260

MUSEUM EXHIBITS

The 1985 season will feature several new exhibits at the Association's Museum. Ed Gable will set up Ken Conrad's National exhibit consisting of receivers and other equipment. By mid-summer, Roland St. Louis hopes to have his commercial-military display ready at the Annex, and Morris Rosenfeld is working on a demonstration of an 1880 light galvanometer recording submarine cable station.

Glenn Fuller, a new assistant curator, is busily engaged making several portable displays including three units of unique variable condensers. Jack Wenrich is studying the possibility of having a light bulb and X-ray display.

The Committee is investigating the feasibility of having a high power semi-modern amateur station at the Annex using all Collins equipment donated by Jack Williams, K2JFV-VE6ACZ. It looks like another busy year for AWA.

New appointments to the Museum staff, in addition to N2EXL, include Babs Fuller as librarian. A high school science teacher, she will inventory our technical books and catalogs. Art Kelly (W2ROB) has been appointed administrative assistant to Charles Brelsford. Art will assist in publicity and work on the new museum layout.